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ABSTRACT

This handbook contains eight generic instructional strategies for use in vocational education contexts. The strategies include: clinical teaching, collaborative approach, cooperative learning groups, direct instruction, environmental/curriculum modification, individualized instruction, task analysis, and peer or adult tutoring. For each strategy, information is provided about the structure of the strategy and its stated purpose, examples of its use in vocational settings, summary of related research, implementation considerations, and sources of additional information. The last section of the handbook, titled "State and National Resources," identifies agencies and organizations in California and across the nation which can provide assistance in implementing these instructional strategies. (JDD)

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Instructional Strategies for Special Education Students In Regular Vocational Classes

A Preservice Handbook

Education Transition Center

ETC

Program, Curriculum, and Training Unit
California State Department of Education
Special Education Division
Sacramento, California

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Program, Curriculum, and Training Unit
California State Department of Education
Special Education Division
Sacramento, California
1988

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Instructional Strategies for Special Education Students In Regular Vocational Classes

A Preservice Handbook

A Project Conducted by:

Gary Greene
Charles Kokaska
Leonard Albright
Corinne Beacham-Green

For:

The California State Department of Education
Education Transition Center
Dr. Patricia Kearly, Coordinator
Sacramento, California

PREFACE

The task of compiling a series of instructional strategies for use with handicapped students in vocational education programs proved to be a unique challenge. We uncovered a host of general strategies which almost always appeared in the special education literature and often in the general field of education. While we found several discussions within the vocational education literature that dealt with some of these strategies, the general pattern was to present specific teaching techniques. Scant attention has been given to the generic instructional strategies in a vocational education context. Moreover, empirical investigation of these strategies within vocational education is amazingly slim, especially when one considers the integration of handicapped students into vocational education has been an important program priority for at least 10 years.

What appears in this handbook is a collection of eight generic instructional strategies that are now placed within the vocational education context. Admittedly, we would be more confident about the applicability of these strategies in vocational education if there was a stronger knowledge base and if we would have had the time and opportunity to observe them in operation in local vocational programs. But such was not the case. We do believe, however, that the challenge of putting these strategies within the vocational education realm was worthwhile and that they hold potential for enhancing the vocational instruction provided to handicapped students. Our hope is that this challenge will now be embraced by many others within our field.

The preparation of this handbook involved the contributions of many individuals. The lead author, Gary Greene, completed most of the necessary research review work and wrote the description for each instructional strategy. Charles Kokaska assumed the responsibility for editing the text. Leonard Albright prepared the Preface, Acknowledgements and Introduction section. The lead author of the Resources section was Corinne Beacham, with assistance from Jeanette Johnson. Corinne and Jeannette also provided leadership to the field review of the instructional strategies. Sharon Jones, who served as research assistant and project secretary, provided important help to all of us during the life of this project. Special appreciation is extended to Jane Twiss, secretary in the vocational education unit at California State University, Long Beach, for her help in preparing the final copy of this handbook.

The assistance of the staff at the Education Transition Center was most appreciated. In particular, the aid of Patt Kearly, Heather Kaney and Pat Dougan during the start-up and product review stages was especially helpful in identifying important resources for us to contact.

The project advisory board members played a key role in shaping the direction of our work. Their careful review of the proposed strategies and the many constructive suggestions they offered for enhancing our efforts were critical to the success of the project.

Finally, a very special note of gratitude is extended to the individuals who served as reviewers of the eight instructional strategies. Their input undoubtedly strengthened the quality of the descriptions provided in this handbook.

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The members of the project advisory board and the reviewers of the draft copies of the instructional strategies deserve special recognition for their contribution. These individuals are listed below:

Advisory Board Members

Sheila Feichtner
Vice-President
Special Needs Division
American Vocational Association
28437 Christopher Lane
Los Altos Hills, CA 94022

Dan Hulbert
Administrator
Whittier Career Assessment
and Placement Center
9401 South Painter Ave.
Whittier, CA 90605

Sally Hedberg
Director
Tri-SELPAS
Job Project
1963 Tice Valley Blvd.
Walnut Creek, CA 94595

Caryl Miller
Coordinator
Special Education
Orange County Department
of Education
PO Box 9050
Costa Mesa, CA 92628-9050

STRATEGY REVIEWERS

I. Cooperative Learning Groups

Linda Lee
Resource Teacher--VISTA Program
Los Angeles Unified School District
Los Angeles, CA 90017

Donald A. Kairott
Instructor, Special Education
California State University, Sacramento
Sacramento, CA 95825

Barbara Nemko
Department of Applied Behavioral Sciences
University of California, Davis
Davis, CA 95616

II. Collaborative Approaches

Lee Roy Black
Associate Professor
Vocational Education and Criminal Justice
California State University, Long Beach
Long Beach, CA 90840

Carlon Gaillard
Instructor/Developmental Disabilities and Vocational Education
Irvine Unified School District
Irvine, CA 92714

M. L. Oxford
Workability II Coordinator
Education Transition Center
Sacramento, CA 95825

III. Task Analysis

Tony Apolloni, Director
California Institute on Human Services
Sonoma State University
Rohnert Park, CA 94928

Gil Lane
Graphic Arts Instructor
Fountain Valley High School
Fountain Valley, CA 92708

Mark Murphy
Special Vocational Work Experience Coordinator
Santa Clara Office of Education
San Jose, CA 95115

STRATEGY REVIEWERS (continued)

IV. Individualized Instruction

Marlene Dick
Associate Professor
Special Education
San Jose State University
San Jose, CA 95192-0078

Fern Burch
Educational Consultant
Computer Science
Lawrence Hall of Science
Kensington, CA 94707

Don Dietz
Department Chair
Graphic Arts
Acalanes High School
Lafayette, CA 94549

V. Clinical Teaching

Pat Cegelka
Professor/Special Education
San Diego State University
San Diego, CA 92182-0001

Patrick D. Keating
Vocational Coordinator
Mission Trails ROP
Salinas, CA 93906

Stella K. Port
Administrator, Research and Program Evaluation
Covina Valley Unified School District
Covina, CA 91723

VI. Environmental Curriculum Modification

Mary A. Falvey
Associate Professor
Division of Special Education
California State University,
Los Angeles
Los Angeles, CA 90032

Connie Hunt
Dental Health Instructor
North Orange County ROP
Anaheim, CA 92801

STRATEGY REVIEWERS (continued)

VII. Tutoring

Don Maurizio
Project Merge
California State University,
Los Angeles
Los Angeles, CA 90032

Khue Tran
Tutorial Specialist
Coastline ROP
Costa Mesa, CA 92626

Jeff Warschaw
Construction Trades/Special Education Teacher
East San Gabriel ROP
Altadena, CA 91001

VIII. Direct Instruction

Roy Bevan
Mentor Teacher/Electronics
Irvine Unified School District
Irvine, CA 92714

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SECTION I

INTRODUCTION

INTRODUCTION

A critical element in assisting handicapped students in making a successful transition from school to work is the provision of high quality instruction in employment preparation programs. While we know that vocational instructors and special education personnel must utilize a variety of instructional strategies to effectively teach handicapped students in vocational education settings, there is a noticeable shortage of training products and publications which offer a comprehensive review of such strategies. There is plenty of information available about the use of a given instructional strategy and related teaching techniques. Unfortunately, however, one would be hard pressed to locate a single document which brings together the major strategies for use with handicapped students in integrated or mainstream vocational education settings.

Purpose

The intent of this handbook is to present a set of eight (8) generic instructional strategies which can be adapted by personnel who are involved in providing vocational instruction to handicapped students. Each strategy is described in detail in the following section. This description includes information about the structure of the strategy, how it may be implemented in vocational settings, and where to find additional information about the respective strategy. The last section of the handbook, titled "State and National Resources," goes one step further by identifying agencies and organizations in California and across the nation which are available for assistnce in implementing these instructional strategies within vocational education programs.

Identification of Strategies and Resources

The eight strategies and resources presented in this handbook are a result of a three-step search and review process. The first step required project personnel to identify and categorize the major instructional strategies used with handicapped students. This involved indepth examination of pertinent documents from the following resource bases:

1. The Vocational and Occupational Information Center for Educators (VOICE)
2. Special Education Resource Network (SERN)
3. Vocational Educational Resource System (VERS)

4. Education Resource Information Clearinghouse (ERIC)
5. The National Center for Research in Vocational Education, Ohio State University

The end result of this search was a preliminary description of ten (10) major instructional strategies and a wealth of personnel, program, and publication resources throughout California.

The second step included a meeting of project personnel with the Advisory Board to the project (the members of this Board are listed in the Acknowledgements). The major intents of this meeting were to:

1. Review a draft description of each of the 10 strategies;
2. Recommend refinements to the proposed strategies; and
3. Finalize a procedure for additional professional review of each strategy description.

This additional professional review procedure was to be used in judging the suitability and practicality of each proposed strategy for use in vocational education programs.

The Board's work resulted in reducing the list from 10 to 8 major strategies and in refining the procedure for obtaining critical review of these eight strategies by vocational and special education personnel in California. The eight strategies are the foci of this handbook.

The third major step in this project was to conduct a field review of the eight strategy descriptions. Three professionals were invited to review each strategy. A total of 21 field readers from special and vocational education participated in the reviews. A list of the reviewers is located in the Acknowledgements. These reviewers were recommended by peers for their recognized expertise in the particular strategy they critiqued. Each reviewer was provided with an instrument to use in evaluating the respective strategy description. This instrument asked the reviewers to judge the strategy description on criteria such as the completeness of the description, the extensiveness of the related research cited, and the clarity of the illustrations. In addition, each reviewer was asked to provide specific recommendations for improving the strategy description.

A number of helpful improvements was suggested by the reviewers and many of these are incorporated in the present descriptions. However, due to unavoidable time and personnel constraints, not all suggested improvements could be addressed through this project. Hence, while this document may represent an important collection of strategies and resources to help local personnel in their efforts to provide quality vocational instruction to handicapped learners, it must be presented in a cautionary tone. This handbook should be viewed as one resource to aid in selecting and utilizing a host of important

insructional strategies. It does not, however, contain all the information necessary for indepth study of each strategy. Additional sources and structured examination of these strategies should supplement the content of this handbook.

Organization of Handbook

A uniform format is used in describing the eight strategies. The following information is provided for each strategy:

1. Description of Strategy. Provides a definition of the strategy and its stated purpose(s).
2. Example. Includes illustrations of the use of the strategy in a vocational education context.
3. Related Research. Offers a summary of research conducted on the particular strategy.
4. Implementation Considerations. Includes guidelines for using the strategy.
5. References. Presents a list of pertinent readings for obtaining more information about the strategy.

Following the eight strategy sections is a section which identifies other agencies and organizations one could call upon to get further direction on the instructional strategies presented in this handbook. Particular attention has been given to readily available sources within California.

Use of Handbook

This handbook has been designed primarily for use in preservice programs which prepare special and vocational educators in educating handicapped students in vocational education environments with their non-handicapped peers. Some or all of these strategies could be used in teaching methods courses for secondary and adult vocational education and special services personnel.

A word of caution is necessary for those who wish to use the handbook in locally-based in-service programs. Each of the identified strategies requires an intensive training effort, especially for individuals who have had limited exposure to these strategies. If this handbook is to be used in an in-service context, adequate time must be alloted for coverge of each strategy. "Adequate" in this sense implies that trainees will be given the time necessary to both understand and demonstrate skill in implementing each instructional strategy.

Finally, and as suggested earlier, this document is viewed as a primer on instructional strategies for handicapped students in employment preparation settings. It is not a complete package offering indepth coverage of each strategy. Additional sources should be used to enhance the information presented.

SECTION II

INSTRUCTIONAL STRATEGIES

CLINICAL TEACHING

Description

Clinical teaching is an instructional strategy which facilitates learning in students who possess unique learning styles (Lerner & Egan, 1979). Clinical teaching, however, can be used for all students in a classroom. The goal of clinical teaching is to tailor learning experiences to the student's individual needs. This is accomplished through a continuous and interlinked process of assessment and instruction. Lerner (1985) offers five phases of the clinical teaching cycle.

1. Assessment. The clinical teacher is a "child watcher," observing in detail what a student is able to do rather than simply noting the errors. Errors, however, are also observed by clinical teachers because they provide critical information regarding a student's present level of performance, development, thinking, and learning style. Data from formalized tests are combined with information obtained from teacher observation to plan the best course of action for teaching.

2. Planning. Clinical teaching does not rely upon any particular instructional system because the intent of this strategy is to identify the most appropriate method for teaching a student with an individualized learning style. Hence, an individual set of lessons and materials is prepared by a clinical teacher for the student, utilizing data obtained from testing and observation. "This task leads to emphasis on what is to be learned by a student as opposed to what is to be taught by the teacher" (Smith, 1974, p. 79). The student is never forced into conforming to a preselected curriculuum (Johnson & Mykelbust, 1967).

3. Implementation. The instructional plan is implemented and the clinical teacher continuously monitors and observes the individual student's responses, successes, and errors. This feedback is utilized by the clinical teacher for making continous decisions regarding the appropriateness of the instructional program.

4. Evaluation. Clinical teaching employs the use of an alternating teach-test-teach process, with the teacher assuming both the roles of tester and teacher (Lerner, 1985). Posttest results are used by the instructor to evaluate the teaching plan. "If the student performs poorly on the test, then the clinical teacher must

reassess the teaching plan, analyze the errors trying to determine the cause of the failure to learn, and develop a new course of action for teaching" (Lerner, 1985, p. 100).

5. Modification. Modifications in instructional materials and methods are made by the clinical teacher if the results of posttesting or teacher observation of student performance indicate the need to do so. The aim is to seek the best method to teach a subject area or skill to a particular learner. The skilled clinical teacher realizes that the best mehtod for one particular student may not be the best method for another. Therefore, modifications in instruction are made with the unique individual in mind.

The 5 steps in the clinical teaching process are continous and interlinked. According to Lerner (1985):

> Clinical teaching, then, implies a concept and an attitude about teaching. It requires continous probing by the teacher, but it does not require any one particular instructional system, educational setting, or style of teaching. The concept of clinical teaching can be applied to teaching an individual student in many settings: a regular classroom, a resource room, or self-contained classroom, or a one-to-one setting. Again, many different intervention strategies or remedial techniques can be used (p. 101).

EXAMPLE #1
Products Preparation Training

A vocational instructor is utilizing clinical teaching in a products preparation class. The teacher administers a manipulative performance test to all students in the class to assess their ability to operate various pieces of equipment. The instructor observes the students' ability to follow directions, solve problems, and function independently. A developmentally disabled student in the class is not able to operate the machines properly when given oral directions by the teacher. However, the student is successful at learning equipment operation procedures when the teacher provides the student with a demonstration, hands-on guided practice, and feedback. The teacher subsequently plans lessons for this student which utilize the assistance of a peer tutor. The developmentally disabled student shadows this student's practice sessions in the class, attempting to match step-by-step all machine operating procedures. The instructor monitors the peer tutoring procedure at least once a day and evaluates its effectiveness. She notes that in certain instances, the

operating procedures for the equipment have not been broken down into enough detail for the developmentally disabled student to understand by watching the peer tutor. A correction of this situation is made, resulting in improvement in learning. The overall instructional plan is successful and the special needs student masters operation of all equipment in the class by the middle of the semester.

EXAMPLE #2
Cosmetology Training

A cosmetology teacher delivers a lecture in his class on how to give a permanent. He presents the material, utilizing an effective lesson plan, direct instruction, and high student involvement. However, a special needs student requires constant practice. The instructor recalls that the special education teacher mentioned that this student's auditory processing skills are low. The teacher subsequently realizes that lecture-based instruction is not the most effective way to present material to the special needs learner. He designs a lesson which will more effectively match the student's learning needs (e.g., she utilizes a film strip which demonstrates how to give a permanent and allows the student to view the film several times before practicing on her own). The teacher has the special needs learner practice the procedure by watching and assisting several other students doing permanents. Regular monitoring by the instructor shows that these guided practice sessions are facilitating learning for the special needs student. The student is then allowed to give a permanent on her own with close monitoring by the teacher. Errors are corrected by the teacher and positive feedback is provided when the special needs learner correctly follows the necessary steps. Eventually, the student masters giving permanents without any help or monitoring by the teacher or other students in the class.

Research

Clinical teaching implies a concept and an attitude about teaching that can be applied in many educational settings (Lerner, 1985). It does not require any one particular instructional method or approach. For these reasons, literature on the topic of clinical teaching is difficult to find. Persons interested in learning more about clinical teaching must investigate studies dealing with the various phases of the clinical teaching cycle (e.g., instructional assessment, planning, implementation, evaluation, and modification). A review of any or all of this literature would be a monumental task beyond the scope of this handbook. For example, numerous textbooks have

been written on the subject of educational assessment alone, just one phase of the clinical teaching cycle. Therefore, the authors have selected particular research that encapsulates the spirit of clinical teaching rather than review literature on each phase of the clinical teaching cycle.

It is important to consider the student's ecological environment in clinical teaching. This refers to the various interactions between the student and where he/she lives and grows (e.g., home, school, social, and cultural environment). These settings exert a strong influence on an individual's learning, aptitude, and progress. Learning competencies depend greatly on positive interactions between the student and the various ecological environments in which they live (Bryan, 1983; Bruinniks, 1978; Osman, 1979). The clinical teacher must be sensitive to the impact of the ecological system on a student's learning.

The clinical teacher may not be able to modify the ecological factors that influence learning, despite demonstrating sensitivity to them. Lerner (1985) reviewed six instructional factors presented by Barsh (1965) that can be adjusted by the clinical teacher and have a positive influence on learning. These are discussed below.

1. Space. This refers to the physical work setting of the student. Some students have difficulty learning in highly distracting environments where lots of activity occurs (e.g., attention disordered individuals). Teachers should attempt to provide these students with a more restricted environment that is free from distractions initially and gradually increase their workspace as they are able to demonstrate greater concentration.
2. Time. Time in the clinical teaching setting is an important instructional variable. The attention span of students varies widely. Lessons should be designed to be completed in a shorter time for students with short attention spans. This can be as simple as asking a student to perform every other problem or row on a math worksheet, for example, instead of the entire page. Another useful technique for students who are careless in completing work is to tell them that when they complete five successive items with 100% accuracy, they do not have to finish the remaining portion of the assignment. This reward focuses their attention on the quality of their work, thereby slowing down their response rate.
3. Multiplicity. This refers to the number of factors that a student must contend with during a learning task. Some students become overloaded if asked to do too much at one time (e.g., given an assignment with more variables than they are able to handle). The clinical teacher who is sensitive to this type of student should consider limitations in:

1. the number of items the student is responsible for learning;
2. the environment or extraneous stimuli; and
3. the modality channels of various teaching methods.

4. Difficulty Level. The difficulty level of the material can be modified (see environmental/curriculum modification) by the instructor to meet the present performance level of the student. Some students who appear intolerant in a learning task may be failing simply because they are being asked to do something that is too difficult for them to accomplish. Modification of the curriculum to meet the present ability level of these students is frequently all that is required to produce dramatic changes in student behavior and learning.
5. Language. The clinical teacher should examine the wording they use when verbally instructing students and giving both oral and written directions. Communication should be planned so that it does not exceed the level of the learner. This is particularly true when teaching language disordered students. The following techniques are helpful.
    1. Use only essential words when giving directions.
    2. Maintain eye contact with students.
    3. Avoid using ambiguous words.
    4. Emphasize meaning with gestures.
    5. Speak in a slow tempo.
    6. Touch the student before talking.
    7. Avoid complex sentence structure.
6. Interpersonal Relationships. The rapport established between teacher and student is critical. It is difficult for learning to take place in students with low self concepts. A positive teacher-student relationship can greatly facilitate learning and formation of positive self concept. The clinical teacher is sensitive to the need to foster positive interpersonal relationships with students.

A wide range of teaching methods are used by the clinical teacher. Lerner (1985, pp. 110-116) reviews a number of these in her chapter on clinical teaching. Clinical teaching intervention can occur at any of the following levels.

1. Analysis of the Student. Instructional intervention at this level focuses on remediating learning problems that are considered internal to the student (e.g., poor psychological processing or developmental learning lags). The role of the clinical teacher is to attempt to teach to the student's strengths rather than weaknesses.
2. Analysis of the Content. The content to be learned by the student is the focus of this clinical teaching intervention. The assumption guiding this approach is that a mismatch exists between the instructional

materials or techniques being utilized by the teacher and the individual learning needs of the student. Resolution of this mismatch (e.g., providing the student with specialized materials or teaching techniques) should result in successful learning.

3. Analysis of the Environmental Conditions. The underlying assumption of this clinical teaching intervention is that the environmental conditions in the classroom in some way are interfering with the student's ability to learn (e.g., the reward structure of the classroom is not motivating the student or the interpersonal relationship between teacher and student is poor). Identification and control of the environmental conditions that exert the greatest degree of influence on the student is the key to resolving learning problems according to this clinical teaching approach.

Implementation Considerations

A. Materials and Resources

Specialized materials and resources are suggested in order to successfully implement clinical teaching. The type of materials used will depend upon the unique needs of the special students. Consulting special education personnel for assistance in identifying specialized materials is suggested. The curriculum modification section of this handbook represents an additional resource which will be helpful to those interested in clinical teaching. Finally, obtaining materials and ideas from mentor teachers, education conferences, and other teachers in the field can result in improving one's clinical teaching skills.

Knowledge of various types of educational assessment instruments (e.g., norm and criterion-referenced tests) and their use is also recommended by those interested in clinical teaching. This information is available in the instructor's manual of various tests or from a teacher education assessment course. Ideally, a course in educational assessment should be completed before an individual begins administering educational assessment tests.

Finally, perhaps the best way to become skilled in clinical teaching is by regularly practicing the steps of this instructional approach (e.g., test-teach-test, monitoring student learning, and providing feedback).

B. Training

Classes in educational assessment and special education instructional methods are recommended for persons interested in acquiring clinical teaching skills. A second source of skills is the literature published in the many educational journals

available to teachers. Finally, educational conferences, workshops, and seminars offer teachers an additional source of information for improving their clinical teaching skills. Some conferences offer a mixture of experts in the field as well as general practitioners who are ready and willing to share ideas about how to improve classroom instruction.

C. Costs

Purchases of specialized materials for special education students can be costly. It is recommended that one consult with special education personnel prior to spending money to buy specialized materials. Frequently, special educators will loan materials to regular teachers who are instructing special needs learners. A note of caution must be made regarding specialized materials and clinical teaching. The essence of clinical teaching is to design materials that fit the unique needs of the special needs student rather than force the learner to conform to the use of a preselected set of materials. Therefore, one should not assume that clinical teaching requires the purchase and use of a wide variety of specialized materials.

Training costs are an additional consideration. These are usually minimal if only one or two classes are required. However, completion of a special education credential program may result in considerable expense. The amount of clinical teaching and training one desires will dictate the necessary expenses. Educational conferences in which clinical teaching skills can be acquired represent one of the least expensive sources of training.

Summary

Appropriate education for the special needs learner must be based on

1. accurate evaluations of individual performance;
2. clear and precise statements about the skills the student needs to achieve;
3. appropriate selection and application of educational materials and methodology; and
4. assignment of the best educational setting for meeting the student's unique educational needs.

The instructional program should also match the student's interests, aptitudes, and abilities as closely as possible. These are the basic components involved in the process of clinical teaching. It is not a strategy that can be quickly learned. It requires specialized and supervised training and practice over an extended period of time. However, when combined with other effective instructional strategies, clinical teaching can be used by vocational educators to successfully integrate special needs students into regular vocational classrooms.

REFERENCES

Barsch, R. (1965). Six factors in learning. In J. Helmuth (Ed.), Learning disorders (Vol. 1). Seattle: Special Child Publications.

Bruinniks, V. (1978). Actual and perceived peer status of learning disabled students in mainstreamed programs. Journal of Special Education, 12, 51-58.

Bryan, T. (1983). Executive summary: The Chicago Institute for the Study of Learning Disabilities. In C. Collin (Ed.), Keys to success (Monograph of the Michigan ACLD Conference). Garden City, MI: Quality Printers.

Johnson, D. & Mykelbust, H. (1967). Learning disabilities. New York: Grune & Straton.

Lerner, J. (1985). Learning disabilities: Theories, diagnosis, and teaching strategies. Boston: Houghton Mifflin.

Lerner, J. & Egan, R. (1979). Clinical teaching: Update. Journal of Clinical Psychology, 8, 219-222.

Osman, B. (1979). Learning disabilities: A family affair. New York: Random House.

Smith, R. M. (1974). Clinical teaching: Methods of instruction for the retarded. New York: McGraw-Hill.

COLLABORATIVE APPROACH

Description

Collaborative approaches combine the knowledge and expertise of several individuals and/or agencies in a common effort to provide a successful vocational education experience for a special needs learner. "Essentially, it is a plan for systematically coordinating available school and community resources for an individual learner" (Phelps & Lutz, 1977, p. 196). The importance of collaborative planning for special needs individuals is underscored by the fact that the Office of Special Education and Rehabilitative Services (OSERS) has defined comprehensive and cooperative transition planning as a critical component to the necessary services provided for secondary school special needs graduates (Will, 1984).

Collaborative planning and teaching with a special needs student may involve any or all of the following individuals.

1. Vocational rehabilitation counselor
2. Vocational placement coordinator
3. Teachers of the special needs student
4. The special needs student
5. Regular vocational instructors
6. Parents of the special needs student
7. Instructional assistants
8. Interpreters (e.g., for a hearing impaired student)
9. Job coach
10. Representatives from community and state special needs vocational training programs and agencies

According to Phelps and Lutz (1977), four basic provisions or options can be identified in a cooperative instructional arrangement.

1. Career-Related Instruction. Individuals whose major responsibility is to provide vocational classroom or lab instruction for the special needs learner.
2. Special Instruction or Services. Individuals who provide special education services for the special needs student.
3. Cooperative Work Experience Services. Agencies and individuals who provide the special needs person with work related experiences.
4. Supportive Agencies. Community agencies or individuals who provide special assistance (financial or otherwise) to the special needs individual.

There are several alternative ways to implement collaborative based vocational instruction for special needs individuals. These can be conducted independently or in combination with one another.

A. Individual Transition Plan

An excellent strategy for facilitating coordination between schools and adult agencies for a special needs individual is the formulation of an individual transition plan (ITP). According to Hardman and McDonnell (1987), the purpose of a formal transition plan is to

1. identify and teach activities that will maximize the special needs individual's participation in community settings;
2. identify the types of community services that will be necessary to support the individual's participation in community life (i.e., work, personal management, and recreation); and
3. complete the steps required to access community services.

The authors add that "each transition plan should include assessment of the special needs student's individual needs, transition goals for both the student and the parents, activities to meet these goals, persons responsible, timelines, and evaluation procedures" (p. 496).

A transition plan should also address the mobility training needs of the student. This is a vital part of many special needs individual`s successful participation in community based job training and employment. A major goal in the transition plan should be to help the student become as independent as possible and this should include the ability to get to and from work without assistance.

B. Team Teaching

A second, more commonly known collaborative based approach to vocational education for special needs learners is team teaching. Team teaching involves mutual planning and coordination between team members in the clarification of goals, objectives, instructional content and techniques, and evaluation of instruction. Trust, respect, recognition of peers, as well as open and honest communication among those who share the teaching responsibilities are essential ingredients of an effective team teaching program (Phelps & Lutz, 1977). Team teaching members should contribute and lead in their area of strength and expertise (Sarkees & Scott, 1985).

There are at least two broad general styles of team teaching.

1. A Hierarchical Team. This type has a designated leader whose ultimate responsibility is to guide and make decisions (Center for Vocational Education, 1977).

2. A Cooperative Team. This type has no designated leader. All members share the leadership and decision making responsibilities equally. Members may take turns being informal leaders, lead in their areas of expertise, or share the leadership.

Cooperative team teaching arrangements for special needs learners should incorporate a schedule and a list of responsibilities so that individuals can prepare their contributions to the team (Sarkees & Scott, 1985). The following questions must be answered during planning sessions (Center for Vocational Education, 1977).

1. What are the initial program objectives and unit objectives?
2. What are the weekly lesson objectives?
3. What lesson content is to be presented?
4. Which content is to be presented by large group presentation?
5. What methods and aids will be used to present that content?
6. Who will make the large group presentation?
7. What will be done during the small group meetings?
8. How will the small groups be organized?
9. What blocks of time will be assigned to large groups, small group, and individualized/independent study?
10. How could the previous day's efforts have been improved?
11. What specific problems have arisen with particular students and how can these problems be solved?
12. Who will work with particular small groups?
13. What types of individual instruction or independent study will be used with particular students?
14. How will the students be evaluated?

Planning should also take into consideration the

1. use of media aids;
2. amount of time required for each session or activity; and
3. appropriate assessment methods (Sarkess & Scott, 1985).

In short, team teaching represents a logical solution to the fact that few vocational teachers possess the necessary training for working with special needs students and few special education teachers possess strong vocational education skills. It may not be possible or advisable for one teacher to become competent in both disciplines (Phelps & Lutz, 1977). Hence, team teaching offers the special and vocational education teacher the opportunity to successfully bridge the gap between their unique disciplines, resulting in the possibility of significantly better vocational education services for the special needs learner.

C. Job Coaches

A third option for providing collaborative based vocational instruction to special needs learners is the use of a job coach. A job coach is an individual who accompanies the special needs individual to the job training site and assists in any or all aspects of on-the-job training. This can include demonstrations, direct instruction, guided practice, provision of direct feedback, reinforcement, and evaluation of the special needs individual's performance of necessary job related skills. In addition, the job coach can serve as a facilitator of communication between the vocational instructor and the special needs student as well as to assist with mobility training.

EXAMPLE #1
Individual Transition Plan and Team Teaching

Jim is a multiply handicapped individual who is interested in restaurant occupations. During his junior year in high school, his special day class teacher arranges a meeting between the special needs coordinator from a regional occupational program (ROP), the restaurant occupations training teacher, Jim, and his parents. Together, they design an individual transition plan for Jim. Subsequently, Jim enrolls in the restaurant training course and begins learning how to become a cook.

The special needs coordinator from the ROP provides Jim with free bus passes and mobility training so Jim can successfully get to the class each day. The special education teacher assists in arranging Jim's schedule so that he is able to leave campus early enough to arrive at the class on time. In addition, she agrees to work with Jim during school time on any academic aspects required in the cook training class. The restaurant training teacher agrees to work cooperatively with Jim's special education teacher in planning the curriculum for Jim as well as making the necessary course modifications in order for him to succeed. Jim's parents offer to pay for any equipment, supplies, clothing, or special materials that he will need to complete the class. Finally, the special needs coordinator from the ROP schedules regular visits to the class and agrees to assist in arranging job training sites for Jim. This collaborative based approach is successful and Jim gets hired as a cook in a local seafood restaurant upon graduation from high school.

EXAMPLE #2
Team Teaching and Job Coach

Joan, a developmental disabilities student, has displayed an interest in working in a large hotel. The instructor arranges for her to take a course designed for special needs students in a local ROP class. The developmental disabilities teacher meets with the ROP instructor and Joan. They discuss Joan's interests and abilities. It is decided that after Joan has received instruction in the ROP classroom, she will then be placed at a hotel near her high school for on-the-job training in room service.

Joan is taught pre-vocational and vocational skills in the ROP class and subsequently placed at a local hotel. A job coach helps mobility train Joan by planning her bus schedule and riding the bus with her. Joan is eventually able to ride the bus to and from work by herself with bus passes provided by the ROP.

Joan's job coach stays with her for on-the-job training to help her learn the skills and requirements of the job. In addition, the job coach provides the developmental disabilities and ROP teachers with a weekly check sheet containing comments and grades assessing Joan's performance. The ROP teacher reviews this information with Joan on a weekly basis and works with her to improve any areas that require additional attention.

Joan is eventually able to work in room services without assistance from the job coach and with periodic progress checks from the ROP instructor. The supervisor has expressed an interest in hiring Joan upon completion of her training.

Research

The authors of this handbook were unable to locate any existing literature base demonstrating empirical evidence of the superiority of collaborative based instructional approaches compared to traditional ones for special needs learners. A few authors have addressed the advantages of collaborative based instruction. Gilliam, Kaye, and Soffer (1982), for example, offer the following list.

1. Group members help each other think creatively.
2. Sharing resources helps to solve problems.
3. Making a public commitment to the plan may encourage members to support its implementation.

Phelps and Lutz (1977) add that team teaching offers the unique opportunity for special and vocational education instructors to obtain a cross-discipline based teaching experience. Perhaps the greatest advantage of the collaborative approach, however, lies in the fact that the responsibility for providing the special needs learner with effective vocational education is not placed solely in the hands of the vocational education teacher. With collaborative planning, most vocational teachers are more likely to experience a feeling of being better prepared for integrating special needs students into regular vocational classrooms.

Implementation Considerations

A. Materials and Resources

Specialized materials for collaborative planning do exist. For persons interested in team teaching, contact the Center for Vocational Education in Athens, Georgia to obtain a copy of Employ the Team Teaching Approach. The concept of an individual transition plan for special needs students is still relatively new, although the Education Transition Center administered through the California State Department of Education is a potential resource to contact if interested in obtaining examples of transition plan documents. One might also consider consulting the local community or county director of special education.

Vocational educators of special needs students should also be aware of the various local, state, and federal agencies that can assist in planning instruction, provide job training, locate job training sites, assist in obtaining job coaches, and offer financial support.

B. Training

Training in collaborative approaches for special needs learners can be obtained from most college or university special education teacher training departments. In addition, a few universities in California (e.g., California State University at San Jose, San Diego, and Long Beach) offer courses in vocational education for handicapped individuals. It is recommended that one contact either the special education or vocational education department at their local university to determine the existence of courses of this nature.

C. Costs

There are no financial costs for Team Teaching and Individual Transition planning. However, costs do exist to obtain the services of a job coach. These are usually covered, however, by the federal or state agency that provides coaches or by special project grants (e.g., WorkAbility, Carl Perkins funds, and Job Training Partnership Act monies).

A substantial amount of cost exists in Team Teaching with respect to the time involved to collaborate with other team members. According to the publication Employ the Team Teaching Approach, team teaching demands that:

1. two or more teachers plan, instruct, and evaluate cooperatively;
2. teachers are assigned a large block of time during which they can schedule activities;
3. teachers have a common planning period each day;
4. teachers have aides or assistants to help with nonteaching duties;
5. a variety of audiovisual materials and aids are used; and
6. teachers cooperatively and continuously evaluate their own performances.

Regular vocational education teachers typically do not have a budget that can incur the costs of these demands. The special education teacher, on the other hand, does have money for the purchase of special audiovisual materials. Furthermore, most special education teachers employ teacher aides to assist in their program.

Summary

Collaborative approaches are one way to increase the quality of instructional services provided for special needs learners involved in vocational education. The old expression, "Two heads are better than one!" appropriately summarizes the advantage of this instructional approach. If team members are willing to invest the time and energy neded to collaborate, this instructional approach can yield substantial benefits for all parties concerned in providing vocational education for special needs learners.

REFERENCES

Center for Vocational Education. (1977). Employ the team teaching approach. Module 19 of category C, Instructional Education, Professional Teacher Education Module Series. Athens, GA: American Association for Vocational Instructional Materials.

Gilliam, J., Kaye, N., & Soffer, R. (1982). Collaborative planning and multidisciplinary development. In L. Burello & N. Kaye (Eds.), Developing the role of the teacher and the team. Falls Church, VA: Counterpoint Books.

Hardman, M. & McDonnell, J. (1987). Implementing federal transition initiatives for youths with severe handicaps: The Utah community based transition project. Exceptional Children, 58, 493-498.

Phelps, L. A. & Lutz, R. J. (1977). Career exploration and preparation for the special needs learner. Boston: Allyn and Bacon.

Sarkees, M. D. & Scott, J. L. (1985). Vocational special needs. Homewood, IL: American Technical Publishers.

Will, M. (1984). OSERS program for the transition of youth with disabilities: Bridges from school to working life. Programs for the Handicapped, 2, 1-5. Washington, D.C.: Office of Special Education and Rehabilitative Services, U.S. Department of Education.

COOPERATIVE LEARNING GROUPS

Description

Cooperative learning is a systematic model for helping teachers implement and work with groups so that students will:

1. Learn the subject matter;
2. Include all levels of learners in their work;
3. Solve group problems and resolve differences with minimal assistance; and
4. Enjoy working together.

Cooperative learning structures succeed in a classroom by forming heterogeneous (e.g., a mixture of different student ability levels), interdependent student work groups to complete academic tasks and assignments. All members of the group perform leadership skills and work together to produce a common group product. Social skills for the group are clearly defined, discussed, observed, processed, and directly taught in order for students to both accomplish shared goals and experience positive social relations with other group members. Individual accountability is checked regularly to ensure that all students are learning. Cooperative learning in many ways is similar to the group effort involved in team sports (e.g., football, basketball, and volleyball). All members of the team need to work together in order for the team to win.

Johnson and Johnson (1986) have outlined four basic elements of cooperative learning groups.

1. Positive Interdependence. Students perceive that the goal of the group is to ensure the learning of all group members, with each member being assigned a task. The actions of any one member of the group are necessary in order for other group members to complete his or her responsibilities. All members of the group receive the same reward, based on their overall achievement.
2. Individual Accountability. Students are tested individually on the required learning, but their grades are averaged to determine the final grade for the group. In this way, students perceive that they must fulfill their individual responsibilities in order for the group to be successful.
3. Collaborative Skills. Cooperative learning groups become proficient in leadership, decision-making, trust-building, communication, and conflict-management skills. This is necessary in order for the groups to function effectively.

4. Group Processing. Groups learn to schedule adequate amounts of time to focus on group maintenance, facilitate collaboration, receive individual feedback, and recommit the group to proper and effective completion of the assigned task.

A number of different cooperative learning methods exist. The four most widely used arrangements outlined by Slavin (1981) are presented below.

1. Student Teams-Achievement Divisions (STAD). Students assemble in teams of four or five members to master worksheets on material covered in a lesson presented by the teacher. Subsequently, they individually take a quiz on that material. The team's overall score is determined by the extent to which each student improved over his or her past performance. The team demonstrating the greatest improvement is recognized in a weekly class letter.
2. Teams-Games-Tournament (TGT). The procedure in TGT is the same as that used in STAD, but instead of taking quizzes, the students play academic games with other members in the class whose past performance was similar to their own. The team score is also based on individual improvement.
3. Jigsaw. Students meet in five or six member teams. The teacher gives each student an item of information which the student must "teach" to the team. Students are then individually tested for their master of the material. Jigsaw II is the same, except that students obtain their information from textbooks, narrative material, short stories, or biographies. The class is quizzed for individual and team scores.
4. Learning Together. After the teacher has presented a lesson, students work together in small groups on an assignment. The team as a whole receives praise and recognition for successfully completing the assignment.
5. Group Investigation. This is a more complex method, requiring students to accept greater responsibility for deciding what they will learn, how they will learn, how they will organize themselves to master the material, and how they will communicate what they have learned to their classmates.

Slavin identified four positive characteristics of each of these cooperative learning methods.

1. The cooperation required among students prevents one student from doing most of the work for the others.
2. In spite of the cooperative nature of the groups, each student must learn the material in order to improve his or her own score and the team score.
3. Even low achievers, who may not contribute greatly, can receive recognition since scores are based on individual improvement over past performance.

4. Students are motivated to cooperate since they receive both a grade and public recognition from the teacher and the class.

EXAMPLE #1
Learning Together Cooperative Groups

A merchandising teacher requires the students in his class to present a fashion show in order to demonstrate their ability to properly color coordinate various items of clothing. Recognizing that several special needs students in the class have difficulties with organizational skills, the teacher decides to utilize the learning together method of cooperative learning and requests the students to work in teams to plan, organize, and present the fashion show. The students meet in groups and, utilizing a form provided by the teacher, write a task analysis of the different jobs that need to be completed for the fashion show. They subsequently volunteer for individual jobs, pair up in smaller groups of two or three for certain tasks, and mutually plan the final presentation of the show. Laura, a special needs student in the group who loves music, volunteers to select and tape record songs for the show as well as assist back stage with dressing the models. Everyone cooperates and accomplishes their designated tasks.

EXAMPLE #2
Group Investigation Method

Students in a health occupations class are required to complete a research report on some aspect of the health occupations field. The teacher decides to utilize the Group Investigation method of cooperative learning to accomplish this objective. She begins by forming student work groups of mixed academic ability levels (e.g., high, average, low achievers, and special needs learners). She has each group select a health occupations topic to investigate, formulate learning objectives, specify how they will research their topic and the materials they will use, and decide how they will report this information to the class. In addition, the students are required to list all of the tasks required to complete the report and to specify persons responsible for each task.

The students meet in their groups, identify the various tasks that need to be accomplished for the report, discuss and vote on which members would best accomplish each task, and begin working on their individual and group assignments. They are able to accomplish this successfully because the teacher has

spent several months teaching the class group processing skills as well as team leadership activities.

The cooperative efforts of the class are successful and all of the reports are completed according to the teacher's specification.

Research

There is a wealth of evidence demonstrating that cooperative learning experiences, compared with competitive or individualistic ones, promote more positive relationships between handicapped and nonhandicapped students (Johnson & Johnson, 1975, 1983, 1986). For a comprehensive review of cooperative learning literature, see Slavin (1981). The following results summarize the general findings which have been accumulated to date.

1. Handicapped and nonhandicapped students interact in positive ways, feel supported and encouraged to achieve, gain an understanding of each other's perspectives, build differentiated and realistic views of each other, accept themselves as their peers accept them, feel academically successful, and develop a positive relationship with each other when learning situations are structured cooperatively (Johnson, Johnson, & Maruyama, 1983).
2. Cooperative learning experiences result in higher achievement and greater retention of learning than do competitive or individualistic learning (Johnson, Maruyama, Johnson, Nelson, & Skon, 1981).
3. Cooperative learning experiences, compared to competitive or individualistic ones, promote greater achievement motivation, more intrinsic motivation, more persistence in completing tasks, and greater continuing motivation to learn (Johnson & Johnson, 1985).

Several additional advantages for both the special needs learner and the vocational teacher when flexible grouping is utilized in vocational education classes are listed by Sarkees and Scott (1985, p. 305). Flexible grouping allows the teacher

1. more time to work among students in the class rather than having to spend a great deal of time with one or two students;
2. to individualize instruction, tasks, and assignments to meet the needs of students in a specific group;
3. to promote peer tutoring between special needs learners and their peers; and
4. to arrange for instruction for the entire class, small group discussions, project groups, and small remedial sessions so that instruction is more diversified and meaningful for all students.

In short, a substantial amount of evidence exists demonstrating the positive benefits afforded to special needs learners and teachers when cooperative learning groups are utilized in the classroom. Cooperative learning is a powerful instructional strategy that, when properly used, increases the mainstreaming potential of special needs learners in regular vocational education.

Implementation Considerations

A. Materials and Resources

No specialized materials are necessary for implementing cooperative learning groups. However, cooperative learning represents a radical change in the classroom organizational structure for students and teachers and should be approached cautiously and with careful planning. Therefore, it is highly recommended that vocational teachers interested in implementing cooperative learning groups consult the literature on the subject prior to attempting to restructure their classroom grouping patterns. The cooperative learning readings cited in the reference section are recommended as an excellent starting point for vocational teachers interested in learning more about cooperative learning groups.

B. Training

Training in how to organize and implement cooperative learning groups in a vocational classroom is highly recommended. Cooperative learning is a popular topic at the present time in the public schools and many local and county school districts offer in-service education on cooperative learning. The following contact sources are recommended for vocational teachers who are interested in obtaining training in cooperative learning groups:

1. Director of staff development;
2. Mentor teachers or mentor teacher coordinator;
3. County office of education director of in-service training; or
4. Department head for elementary and/or secondary teacher education training at the nearest college or university.

C. Costs

Financial costs for implementing cooperative learning are minimal. No specialized equipment or materials need to be purchased to implement cooperative learning, with the exception of training costs (e.g., release time or fees for training session). In addition, individuals planning on utilizing cooperative learning groups must allow for an adequate amount of time to acquire training and practice learning group methods in

the classroom in order to become proficient in the use of this instructional strategy. Teachers who attempt to implement cooperative learning without proper preparation and background have a greater likelihood of experiencing difficulties. Therefore, it is highly recommended that instructors allow enough time to explore the use of this instructional strategy, observe others who have become proficient at it, and obtain the necessary training to implement the strategy successfully.

Summary

Cooperative learning is an instructional intervention that has been extensively researched and found to consistently yield positive learning outcomes for special needs students. One of its greatest assets is the positive effect it has upon the attitudes and self-esteem of the special needs learner. It promotes greater acceptance of this individual by other students in the classroom. The use of cooperative learning in regular education classrooms is on the rise. Its use in vocational classes with integrated special needs learners is potentially very exciting. Vocational educators interested in improving the quality of instruction for special needs students should consider the many benefits this instructional strategy has to offer.

REFERENCES

Johnson, D. W. & Johnson, R. (1975). Learning together and alone: Cooperation, competition, and individualization. Englewood Cliffs, NJ: Prentice-Hall.

Johnson, D. W. & Johnson, R. (1983). The socialization and achievement crisis: Are cooperative learning experiences the solution? In L. Bickman (Ed.), Applied social psychology annual 4. Beverly Hills, CA: Sage Publications.

Johnson, D. W. & Johnson, R. (1985). Motivational processes in cooperative, competitive, and individualistic learning situations. In C. Ames and R. Ames (Eds.), Attitudes and attitude change in special education: Its theory and practice.

Johnson, D. W. & Johnson, R. (1986). Mainstreaming and cooperative learning strategies. Exceptional Children, 52(6), 553-561.

Johnson, D. W., Johnson, R., & Maruyama, G. (1983). Interdependence and interpersonal attractions among heterogeneous and homogeneous individuals: A theoretical formulation and meta-analysis of the research. Review of Educational Research, 53, 5-54.

Johnson, D. W., Maruyama, G., Johnson, R., Nelson, D., & Skon, L. (1981). The effects of cooperative, competitive, and individualistic goal structures on achievement: A meta-analysis of research. Psychological Bulletin, 89, 47-62.

Sarkees, M. D. & Scott, J. L. (1985). Vocational special needs. Homewood, IL: American Technical Publishers.

Slavin, R. E. (1981). Synthesis of research on cooperative learning. Educational Leadership, 83, 655-659.

Additional Resources

Buffer, J. J. & Scott, M. (1986). Special needs guide for technology education. International Technology Education Association, 1914 Association Drive, Reston, VA 22091.

California Association for Cooperation in Education (CACIE). Dr. Mary Male, Division of Special Education and Rehabilitative Services, School of Education, San Jose State University, San Jose, CA 95162 (408) 277-2646.

Dishon, D. & O'Leary, P. (1984). A guidebook for cooperative learning: A technique for creating more effective schools. Holmes Beach, FL: Learning Publications.

The Johns Hopkins University, John Hopkins Team Learning Project Center for Social Organizations of Schools, 3505 N. Charles Street, Baltimore, MD 21218 (301) 338-7570.

Resources on Cooperative Learning, RSC Library, December 1986, SERN RSC, 650 University Ave., Room 201, Sacramento, CA 95825.

University of Minnesota, Cooperative Learning Center, 202 Pattee, Hall, 150 Pillsbury Drive, S.E. Minneapolis, MN 55455 (612) 373-5829.

DIRECT INSTRUCTION

Description

Direct instruction emphasizes an active and direct role for the teacher when engaged in the teaching/learning process (Bickell & Bickell, 1986). Researchers such as Brophy (1979a), Good (1979), and Rosenshine (1976) view direct instruction as a conceptual orientation to a particular teaching style and as an instructional paradigm that can be used with a variety of curriculum materials. Thomas (1983) wrote that common components of direct instruction are:

1. a teacher-oriented approach;
2. activities which have an academic focus;
3. sufficient time allocated for instruction;
4. an emphasis on classroom management;
5. many practice opportunities for students to respond;
6. material taught in small steps with a high rate of student accuracy; and
7. frequent testing of student learning with appropriate feedback procedures (c.f. Berliner & Rosenshine, 1976; Brophy, 1979a; Carnine & Silbert, 1979, Good, 1979; Murnane & Phillips, 1978; Rosenshine, 1978a, 1978b; Rosenshine & Meyers, 1978).

Direct instruction is most appropriately used when basic skills mastery is desired for students, the nature of the cognitive objective is convergent (e.g., there is only one right answer as in learning number facts or spelling), and the students require a high degree of structure (Borich, Kash, & Kemp, 1979; Peterson, 1979).

EXAMPLE #1
Health Care Occupations Lesson

A health care occupations teacher is planning an instructional unit on the name and location of various organs in the human body. Individualized programmed instructional materials were used previously during this lesson, but many students did not master the instructional objectives. Therefore, the teacher decides to use direct instruction the next time he teaches the unit. He begins by pretesting the students knowledge of the content of the lesson. He subsequently teaches a structured lesson, utilizing charts showing the names and location of organs in the human body and plastic models for the students to view and manipulate. He provides the class with worksheets

and has them label the body parts during presentation of the lesson. He continually asks questions during the lesson and provides feedback regarding the accuracy of the students' responses. When the lesson is over, he administers a posttest.

EXAMPLE #2
Woodshop Lesson

A woodshop instructor wants students to memorize the names of various types of woods and their appropriate use for class projects. Many of the students in the class possess learning difficulties (e.g., attention deficits, reading difficulties, behavioral problems). The instructor begins the lesson by stating her behavioral expectations as well as rewards and consequences for student behavior. She subsequently conducts a lesson requiring a high degree of student involvement (e.g., students are asked where they have seen the use of these woods, what they think is the best use of the wood, and what type of project they would consider best for each type of wood). The students are requested to take notes during the lesson. To minimize the amount of writing required, the instructor presents the notes on an overhead projector and provides the students with a copy of the notes with blank, fill-in spaces to be completed during the lesson. She requires continual eye contact from the students when she is talking, asks them to write notes only when instructed to do so, and actively involves every student in the lesson (e.g., when answering questions to the lesson, students share their answers with a neighbor before the instructor calls on someone to answer for the class). The lesson runs smoothly from beginning to end and a posttest of student knowledge yields favorable results.

Research

Results from investigations of the efficacy of direct instruction have been gathered both from observations of effective teachers and experimental tests of direct instruction (for a review of this literature, see Thomas, 1983). These studies have shown that

1. direct teaching methods are positively correlated with pupil achievement of lower order cognitive objectives (Borich, Kash, & Kemp, 1979);
2. fewer behavior problems occur in classes where direct instruction is practiced (Good & Grouws, 1979);
3. higher rates of student response and on-task behavior occur in classes utilizing direct instruction (Carnine, 1981); and

4. a greater possibility of moving expeditiously through learning activities exists when teachers engage in direct instruction (Talmage & Rasher, 1979).

Direct instruction is beneficial for special needs learners for a number of reasons. Peryon (1978) contends that the strength of this instructional approach lies in the structure it provides for teaching a specific set of skills and concepts. This structure offers special needs students an explicit framework from which to develop the necessary skills to master a given learning task. Direct instruction also provides more modelling of correct thinking and responses for special education students than is present in other forms of teaching (Brophy, 1979b). Finally, Good (1979) hypothesized that direct instruction is successful because it emphasizes the importance of the teacher's role in the learning process, increases teacher clarity and enthusiasm during instruction, and provides a plausible and practical system of instruction.

Implementation Considerations

A. Materials and Resources

No specialized materials are required for direct instruction. However, the existence of a written lesson plan specifying the anticipatory set (introduction to the lesson that is meaningful to the students and captures their interest), guided practice, independent practice, and closure portions of the lesson is often used by teachers who practice direct instruction. Posting classroom rules, expectations, rewards, and consequences are also common items found in direct instruction. The physical layout of a classroom in which direct instruction is practiced is arranged so the teacher can see all of the students from anywhere in the class at all times. Finally, teachers who effectively practice direct instruction possess a wide repertoire of behavioral interventions that range from subtle and unobtrusive to varied and direct (for examples of each, see Morsink, 1984, pp. 151-153).

B. Training

Most college teacher training programs contain courses in which the elements of effective teaching (one of which is direct instruction) are presented. Persons interested in receiving training in the use of direct instruction should contact a teacher education training institute to inquire about such courses. Another resource in California to learn about direct instruction are mentor teachers. School districts throughout the state have mentor teacher programs whose primary responsibility is to assist teachers new to the profession. Most of these programs offer in-service training experiences for new teachers on effective classroom practices. It is, therefore, recommended that contact with a local school district's mentor teacher

coordinator be made to inquire about in-services on direct instruction. County offices of education also offer training occasionally on effective teaching practices. Finally, reading effective teaching literature (see References) is another way to learn about the varous components involved in direct instruction.

C. Costs

There are no costs involved in implementing direct instruction other than fees for university classes and/or in-service training. For persons with no experience in the use of this instructional strategy, allow six months to two years to perfect its implementation. One should also seek observation and feedback from a supervisor while learning the strategy. Despite these recommendations, this strategy is relatively easy to master and most teachers will experience immediate and long-lasting positive effects with special needs learners when utilizing direct instruction.

Summary

The practice of teaching has undergone a number of philosophical changes. Teaching has evolved from an art to that of a legitimate science. Direct instruction is a strategy that has been researched and proven effective, particularly with special needs learners. Vocational education possesses many of the same basic instructional requirements found in education in general. Hence, there is every reason to believe that vocational instructors who are adept at direct instruction can offer classes in which special needs learners can experience success. For this reason, direct instruction represents a viable approach to providing quality vocational education for special needs learners.

REFERENCES

Berliner, D. C., & Rosenshine, B. (1976). The acquisition of knowledge in the classroom. Beginning teacher evaluation study. Technical report IV-1. San Francisco, CA.: Far West Laboratory for Educational Research and Development. (ERIC Document Reproduction Services No. ED 146 158)

Bickel, W. E., & Bickel, D. D. (1986). Effective schools, classrooms, and instruction: Implications for special education. Exceptional Children, 52(6), 489-500.

Borich, G. D., Kash, M. M., & Kemp, F. D. (1979). What the teacher effectiveness research has to say about teaching practices and student performance. Austin, TX: University of Texas. (ERIC Document Reproduction Service No. ED 189 077)

Brophy, J. E. (1979a). Teacher behavior and its effects. Journal of Education Psychology, 71, 735-750.

Brophy, J. E. (1979b) Teacher behavior and student learning. Education Leadership, 37, 33-38.

Carnine, D. W. (1981). High and low implementation of direct instruction teaching techniques. Education and Treatment of Children, 4, 43-51.

Carnine, D. W. & Silbert, P. (1979). Direct instruction reading. Columbus, OH: Charles E. Merrill Publishing Company.

Good, T. L. (1979). Teacher effectiveness in the elementary school. Journal of Teacher Education, 30, 52-64.

Good, T. L., & Grouws, D. A. (1979). Teaching mathematics learning. Educational Leadership, 37, 39-45.

Morsink, C. V. (1984). Teaching special needs students in regular classrooms. Boston: Little, Brown and Company.

Murnane, R. J., & Phillips, B. R. (1978). Effective teachers of inner city children: Who they are and what they do. Washington, D. C.: National Institute of Education. (ERIC Document Reproduction Service No. ED 146 158)

Peryon, C. D. (1978). Direct instruction. Don't I instruct directly? Agana, Guam: International Reading Association Annual Conference. (ERIC Document Reproduction Service No. ED 166 191)

Peterson, P. L. (1979). Direct instruction: Effective for what and for whom? Educational Leadership, 37, 46-48.

Rosenshine, B. (1976). Recent research on teaching behaviors and student achievement. Journal of Teacher Education, 27, 61-64.

Rosenshine, B. (1978a). Academic engaged time, content covered, and direct instruction. Champaign, IL: University of Illinois. (ERIC Document Reproduction Service No. ED 152 776)

Rosenshine, B. (1978b). Instructional principles in direct instruction. Toronto, Canada: American Educational Research Association Annual Meeting. (ERIC Document Reproduction Service No. ED 155 152)

Rosenshine, B., & Meyers, L. (1978). Staff development for teaching basic skills. Theory Into Practice, 17, 267-271.

Talmage, H., & Rasher, S. P. (1979). A study of the effects of three demensions of instructional time on academic achievement. San Francisco. CA: American Educational Association Annual Meeting. (ERIC Document Reproduction Service No. ED 173 327)

Thomas, C. C. (1983). An examination of the efficacy of direct instruction techniques in special education classrooms. Unpublished dissertation, Lexington, KY: University of Kentucky.

ENVIRONMENTAL/CURRICULUM MODIFICATION

Description

Environmental/curriculum modification refers to adjusting or changing the classroom physical or learning environment to accommodate the unique abilities, needs, learning styles, and occupational goals of the special needs learner. Many special needs students cannot learn at the same rate or through the same instructional materials provided for regular vocational students. Vocational education program components must be individually tailored to the learning style and level of the special needs students in these instances.

Environmental modification for some special needs students is critical to their successful integration into the vocational classroom. The Architectural Barriers Act of 1968 (PL 90-840) required that any public agency which built or substantially renovated its facilities since 1968 and received federal support must be accessible to handicapped persons. In addition, stipulations in the Rehabilitation Act of 1973 (PL 93-112) required that any program or activity receiving federal support cannot exclude handicapped persons from participation. Finally, The Vocational Education Act of 1984 (PL 98-524) mandated that special services, including adaptation of curriculum, instruction, equipment, and facilities be provided by agencies receiving federal funds for the education and training of handicapped students. The implications of these accessibility laws are that vocational planners, administrators, and educators must find ways to modify facilities and equipment so that special needs individuals will have equal access to programs, services, and activities. The following list offers a few examples of environmental modifications to be considered for certain special needs learners.

1. Building entrance accessibility
2. Provision of parking space and/or drop-off areas
3. Restroom accessibility
4. Provision of ramps, elevators, and wider aisles and work/study areas
5. Accessibility to emergency exits
6. Smooth, non-skid floor coverings
7. Water fountains placed low enough for wheelchair accessiability
8. Handrails on both sides of stairways
9. Adequate hall lighting
10. Rounding of edges and corners on furniture
11. Adjustable desk surfaces

A comprehensive list of these and other recommended modifications for handicapped persons in mainstreamed settings can be found in Chapter 7 of Sarkees and Scott (1985).

A second major modification often necessary for handicapped persons enrolled in regular vocational classes is in the area of curriculum. The goal of curriculum modification is to tailor the materials, activities, and experiences in regular vocational education settings to the unique needs of the special needs learner to the maximum degree possible. Curriculum modification is not synonymous with the lowering of academic standards. Special needs students still must be expected to meet certain minimum proficiency and employability standards to complete a regular vocational education program. However, curriculum modification is necessary to enable certain special needs students to enter and continue in regular vocational education programs. Potential curriculum modifications include

1. additional time to develop skills;
2. providing support systems such as tape recorders;
3. having tests read to students;
4. using specially designed textbooks or workbooks;
5. adjusting the readability level of printed material to the abilities of special needs learners;
6. adjusting size and spacing between lines and providing wider margins in reading material; and
7. considering alternative response modes such as oral answers, a drawing, or a physical model.

Phelps (1975) developed an instructional materials checklist that can be utilized to evaluate the adequacy of commercially produced or teacher prepared materials for use with special needs students.

The following major curriculum modification considerations are suggested by Sarkees and Scott (1985, Chapter 8).

1. Establish realistic goals.
2. Establish a favorable learning environment.
3. Match learning styles with teaching styles.
4. Establish readability levels for materials used in the program.
5. Select appropriate instructional materials.
6. Modify existing materials.

EXAMPLE #1
Environmental Modifications

A physically handicapped student is enrolled in a home economics class. The instructor engages the help of the industrial arts teacher and acquires some financial assistance from the local Kiwanis Club to make the following classroom environmental modifications.

1. A wooden bowl holder is utilized to assist the student for stiring and mixing activities.
2. An electric can opener is purchased.
3. A holder to keep pots and pans in place while stirring and cooking on top of a stove is built.
4. A peeling and cutting board is constructed with nails which protrude from the center of the board to hold fruits and vegetables in place.
5. A brush with suction cups is attached to the bottom of the sink to provide a convenient way to wash dishes and glasses.

EXAMPLE #2
Curriculum Modification

A developmentally disabled student is enrolled in an agriculture occupations class. The instructor decides to train the student to master only one job in the class rather than require him to master all of the jobs presented during the semester. The instructor also arranges to have one of the other students in the class tape record required text readings for the special needs student. Finally, the special needs student is allowed to take all of the exams in the class orally and is required to demonstrate the various steps in his job rather than write a report presenting this information.

Research

The authors of this handbook are unaware of empirical based literature investigating the effects of environmental modifications for special needs learners. Published articles on curriculum modification are available and a review of some of this literature follows.

During the decade of the 1970s, a number of attempts were made to develop special curricula for educable mentally retarded students (for a review of these materials, see Gallagher & Simeonsson, 1982; and Morsink, 1984, pp. 307-311). Examples of these curricula are presented below.

1. Social Learning Curriculum. This material contained an organized curriculum package on instruction of social adaptive skills for educable retarded students.
2. Biological Sciences Curriculum Study (BSCS) Projects. The staff of BSCS took fundamental concepts dealing with the important biological questions such as digestion, circulation, respiration, growth, and development and scaled the concepts to levels of understanding for the mentally retarded.

3. Laboratory Science and Art Curriculum for Blind, Deaf, and Emotionally Disturbed Children: A Mainstream Approach. The purpose of this publication was to design, implement, test, and evaluate in a mainstreamed setting a laboratory science and art program for special needs learners.
4. Be Now. This was the first of the life science curricula designed specifically for the mentally retarded. It was designed to involve students in direct investigation rather than requiring them to read or listen to teacher lectures about the material.

Many of these materials were extensively field-tested for mentally retarded students. In all but a few instances, the students using the materials were able to achieve the program's objectives at an acceptable level (Moreink, 1984).

Development and field testing of vocational education curriculum materials for special needs learners remains to be explored in the literature. Prevocational/work study materials and programs for special needs students have been investigated by a variety of researchers (see Gallagher & Simonsson, 1982 for a review of this literature), yielding favorable results. In general, special education students who have completed specially designed prevocational training programs have achieved higher rates of employment compared to similar students who have completed traditional, academic ones.

Implementation Considerations

A. Materials and Resources

Specialized materials are needed in order to make necessary environmental modifications for special needs learners. Building and structural modifications for the handicapped are published by the Architectural and Transportation Barriers Compliance Board, an executive agency of the federal government.

Curriculum for special needs learners can be obtained from a variety of resources. Publisher's catalogues of special education materials is an appropriate place to begin. The Clearinghouse Depository for Handicapped Students, P.O. Box 944272, Sacramento, CA 94244-2720 (916) 445-3183 offers special media materials, in-service training for teachers on curriculum modification, and will transcribe materials into braille, large size type, or put books on tape for students with special needs.

B. Training

Specialized training in environmental/curriculum modification for special for special needs learners is not necessary. Most of the information regarding these topics is available in published materials. Consulting and networking with special education personnel (e.g. resource specialist, special

day class teacher, and adaptive physical education specialist) is another effective way to acquire information regarding modified curriculum and materials for special needs learners.

C. Costs

Environmental/curriculum modification can be a very costly endeavor. Modification to existing buildings and structures to accommodate handicapped individuals is expensive.

A wide variety of curriculum materials exist for special needs learners. These can range in price from less than $10.00 for a reproduceable workbook to several hundred dollars for major curriculum packages. Vocational education teachers may not possess budgets which can incur the costs of additional materials for special needs learners. The cooperation and assistance of organizations offering financial assistance for handicapped persons is recommended in these instances. A listing of national and state organizations with information about assistance is provided in the Section III of this handbook.

Summary

Environmental/curriculum modification is a necessary component to most vocational education training programs which integrate special needs learners. Many special needs individuals are unable to successfully participate in vocational education without modifications to training facilities and curriculum. Vocational educators can accommodate special needs learners much more effectively when these modifications are made. Frequently, collaborating and gaining assistance from other persons involved in providing education for special needs students is all that is required to learn about the modifications and changes that can be made in a vocational education classroom. Vocational educators who acquire this information will be able to offer significantly greater quality vocational education training experiences to special needs students as a result of these efforts.

REFERENCES

Gallagher, J. J., & Simonson, B. (1982). Educational adaptations for handicapped children. Peabody Journal of Education, 59(4), 301-322.

Morsink, C. V. (1984). Teaching special needs students in regular classrooms. Boston: Little, Brown and Company.

Phelps, L. A. (1975). Instructional development for special needs learners: An inservice resource guide. Urbana, IL: Department of Vocational and Technical Education, University of Illinois.

Sarkees, M. D., & Scott, J. L. (1985). Vocational special needs. Homewood, IL: American Technical Publishers.

INDIVIDUALISED INSTRUCTION

Description

Individualised instruction is a method that focuses teaching on the individual learner, taking into account the different attributes of the student and variations in their learning style (Beacham, 1978). According to Cross (1976), individualized instruction is characterized by the following components.

1. Active Learning. The learner is actively involved in the learning process. He or she may be solving problems, cycling through learning packages, or conducting experiments.
2. Objectives. The learner is aware of the instructional objectives of the unit. In essence, the learner knows where he or she is going.
3. Small Units. The learning task is divided into a quantity of short, instructional activities. Often a one-semester curriculum will be broken down into 20-25 units. This allows for mastery of reasonable units of material and can prevent student discouragement. (Learning activity packages can be prepared for each unit. These packages typically contain objectives, learning activities, and evaluation systems.)
4. Evaluation. The learner is provided with a range of assessment activities. Pre/posttests, check lists, experiments, hands-on, behavioral observations, and self reports are just a few of the many methods of evaluation.
5. Self Pacing. The learner has the opportunity to self pace throughout the learning sessions.

Individualised instruction does not require that a teacher works one to one with each student. Rather, the method allows students to work at their own pace using a variety of instructional materials and resources to facilitate learning. An underlying assumption of this strategy is that there is no one method or technique that will fit all learners. Hence, every unit of instruction must be individualized for each student (Thalge, 1979).

Individualised instruction can incorporate the use of any or all of the following techniques (Beacham, 1978; Dick, 1984; Reiser & Scott, 1983).

1. Student participation in goal setting, selection of learning activities, and evaluation of progress.
2. Allowing the student to work alone and sometimes as a member of small groups.

3. Varying the sequencing and pacing of instruction (e.g., not requiring all students to complete the same hierarchy of ordered instruction at the same pace).
4. Varying the level of difficulty of instruction to ensure continued motivation and chance for success in individual students.
5. Providing a variety of learning experiences using a variety of instructional media and materials (e.g., concrete, practical, hands-on experiences, demonstrations, lectures, discussions, teacher-student conferences, programmed instruction, experiments, and written instruction).
6. Creating various physical learning environments that enhance individual learning (e.g., learning/work centers, group tasks, and student-teacher conferences).
7. Varying the amount of time that is allowed for learning to occur and performance mastery to be demonstrated (e.g., open entry/open exit points for individual students to complete a vocational instructional program's required tasks).
8. Diversifying assessment techniques (e.g., manual performance tests, written performance tests, and oral performance tests).

Student differences must be taken into account when planning and implementing individualized instruction. The nature of the unit of instruction must be evaluated to determine the appropriateness of the instructional methodology for use with special needs learners. Educational assessment data detailing a special needs learner's abilities in reading, mathematics, written language, and learning strengths and weaknesses must be made available to vocational educators. Other relevant abilities, interests, and occupational goals of the student should be considered as well. Vocational teachers should work closely with other personnel who are providing services to the special needs individual in order to gain as much relevant information about the student as possible. Conversely, special education personnel must supply relevant information about the special needs student to the vocational educator.

Dick (1984) and Barkees and Scott (1985) have identified a number of steps that are helpful in providing individualized instruction for special needs learners.

1. Identify through job analysis the units of instruction needed to prepare students for available jobs in the community.
2. Select goals and objectives for the student.
3. Pre-assess the student's abilities.
4. Select appropriate instructional activities, methods, and materials for each goal and objective.
5. Identify the most appropriate learning environment which will best enhance the student's mastery of skills to be acquired.

6. Develop a record keeping system containing the student's goals and objectives, corresponding instructional activities, materials, and pre and posttest assessment results.
7. Post-assess the student's abilities to evaluate the effectiveness of the individualized instructional program.

EXAMPLE #1
Automotive Maintenance Training

A student with learning disabilities has enrolled in an automotive maintenance course and is anxious about his ability to keep up with the pace of the class. The instructor meets with the student to identify occupational goals and to specify instructional objectives. A variety of instructional activities are identified and matched to each instructional objective. The instructor pretests the student before beginning each unit of instruction. Instructional media, such as filmstrips and movies, are used to teach the student engine parts and systems. Self-paced learning activity packets covering the steps and procedures involved in various maintenance and repair tasks are completed by the student. Hands-on experience, demonstrations, and peer tutors are used to help the student learn engine repairs. The instructor keeps records of the student's progress toward mastery of each objective and posttests the student after each unit is successfully completed. After all instructional units are completed, the automotive teacher meets with the student to determine if he desires to continue in the course or exit the class. The student decides to exit the course and seek a job in an automotive repair shop.

Individualized Instructional Methods

There are a number of different methods of individualizing instruction for special needs learners. These can be categorized as either

1. methods for organizing the content of individualized instruction (e.g., programmed instruction, computer assisted instruction, mastery learning, and learning contracts); or
2. methods dealing with the delivery of individualized instruction (e.g., competency based instruction).

1. Programmed Instruction

Programmed instructional materials present small step, sequential information to students in either a written or

mediated format (Morsink, 1984). Students make continuous responses to programmed materials and receive immediate feedback that either confirms or corrects their responses. The materials allow students to progress at their own speed.

Vocational instructors can utilize programmed instruction by creating a set of learning modules or individualized instructional packets for students to complete in a step-by-step fashion until mastery is achieved.

EXAMPLE #2
Printing and Reproduction Training

A special needs student enrolled in a printing and reproduction class is to receive training in the maintenance and operation of a printing press. The instructor has the student watch a filmstrip containing this information. A self-paced learning manual accompanies the filmstrip which the student is instructed to complete. He is then required to take a posttest that can either be self-checked or checked by the instructor. The student views the filmstrip, completes the manual and test, and has the test checked by the instructor. She passes the test and is subsequently provided with "hands-on" instruction in running the printing press.

Research

Programmed instructional materials are most appropriate for students who require a systematic approach to learning (Morsink, 1984). Not all special needs learners respond well to the small steps and structure inherent in these materials (Haskel, 1971; Morris, Blank, McKie, & Rankine, 1970). Programmed instruction is best utilized in teacher-directed introductory lessons with classroom subjects or subskills that emphasize factual information or require large amounts of practice (Morsink, 1984). Programmed instruction does not encourage divergent thinking in students. Teachers should be cautious in their use of programmed instruction because this method can tend to emphasize "single right answers" to questions and the materials, when used improperly, may seem like "busy work" to students.

Hinton (1978) reviewed over 300 articles and books on individualized instruction. He noted that students stated that they liked programmed instruction because of the self-pacing and individualized modules and felt that the behavioral objectives helped increase their learning. Most studies indicated that students worked harder, as well as learned and retained more information better with programmed instruction compared to more traditional instruction.

2. Mastery Learning

Mastery learning is an instructional method in which the teaching-learning process includes testing, feedback, and correction (Guskey, 1981). Mastery learning also focuses on objectives, small units of instruction, and self-pacing. This instructional approach was developed by Bloom (1968) who was concerned that only a small percentage of students in a classroom truly master the objectives and materials presented by the teacher. Morsink (1984, p. 164) stated that students instructed with a mastery learning approach "are tested, graded, and then either given additional instruction or practice (if they had not met criterion level), or allowed to work on supplementary or enrichment activities (if they have demonstrated mastery on tests)." The mastery learning process typically includes the following steps:

1. Pretesting
2. Instruction
3. Practice
4. Posttesting
5. Re-teaching the lesson for those not meeting criterion
6. Re-testing students who were re-taught

One of the most commonly used forms of mastery learning on post-secondary campuses is the Personalized System of Instruction (PSI) or the Keller Plan. The essential features of PSI are

1. the formulation of clear course objectives made explicit to the students;
2. self-paced usage of a variety of student materials;
3. the mastery of one unit of study before proceeding to the next;
4. the use of occasional lectures and demonstrations as vehicles for motivating students; and
5. the use of proctors or tutors who administer and correct tests and discuss them with students (Learning Research Center, 1978).

Several advantages to the use of mastery learning for special needs learners are the opportunity to:

1. receive additional time to continue working on a given skill until mastery is achieved;
2. receive remedial instruction when needed;
3. repeat a lesson, unit, or course should mastery of skills fail to be achieved initially; and
4. experience success in a class versus failure.

EXAMPLE #3
Auto Mechanics Training

An auto mechanics instructor is to teach an instructional unit on shop safety practices. Students in the class must pass a shop safety test before they are allowed to work in the shop. The instructor pretests the class and three students pass the test. He has them work on an individualized programmed instructional packet on the parts of an engine while he teaches the safety unit to the remaining students in the class. Posttest results of these students reveal that a special needs learner and two other students failed the safety test. The instructor analyzes the items missed, reteaches this material, and readministers the test. All three students pass the safety test.

Research

Guskey (1981) noted that close to 80% of students in a classroom should be able to attain the mastery levels that were previously attained by only 20%, according to his review of mastery learning literature for special needs students in mainstreamed classrooms. He cautions, however, that teachers who implement mastery learning will have to learn to be instructional leaders and facilitators rather than "managers of competition" (reported by Morsink, 1984).

According to Levine (1979), PSI produces superior student performance and retention of learning material, results in greater student enthusiasm toward courses taught, and yields a lower student failure rate than non-PSI classes. Hunter (1975) noted that mastery learning approaches used in 120 colleges in 19 states produced instruction that was most cost-effective, increased student achievement, was preferred by students, and was not threatening to teachers compared to other instructional methods.

3. Computer Assisted Instruction (CAI)

Computer assisted instruction, like programmed instruction, presents learning material to special needs learners in a step-by-step fashion and provides immediate feedback. CAI is self-paced and allows the individual to work at his/her own speed. The instructional sequences presented can be tailored to the unique needs of the individual student. Tutorial, inquiry, simulation, drill and practice, and problem solving are the most common instructional applications of computers with special needs learners.

The primary difference between computers and traditional programmed instructional materials lies in the motivational aspects of the computer. CAI promotes a high degree of interest

and attention from special needs learners due to the auditory and visual nature of the computer. Computers offer special needs students the opportunity to express their intelligence through the use of application programs, word processing, data bases, spreadsheets, simulations, and basic programming. Consideration of these uses of the computer with special needs students as a means of increasing their motivation to learn is recommended.

Sarkees and Scott (1985) summarize the advantages of computer assisted individualized instruction for special needs learners in vocational classes. "The microcomputer:

1. provides the learner with individual attention;
2. provides a multi-sensory learning environment;
3. provides a variety of reinforcement, regardless of how many repetitions are necessary;
4. allows learners to drill, repeat, and practice;
5. provides learners with control of the learning environment and permits them to progress at their own pace;
6. provides immediate feedback;
7. provides teachers with diagnostic and prescriptive information;
8. decreases the need for teachers to spend a great deal of time preparing paper-and-pencil assignments and activities; and
9. provides parents who have a home computer with a tool to reinforce school assignments" (p. 322).

EXAMPLE #4
Business Occupations Training

A special needs student enrolled in a business occupations class is being taught word processing skills. The instructor notes that the student's typing skills are weak and need improvement. However, the teacher does not want to instruct the student in typing at the expense of the time needed for teaching word processing. The teacher arranges to have the student stay for a half hour after every class and work with an individualized computer program that provides drill and practice on keyboard skills utilizing an arcade game format. After several weeks of individualized instruction, the student's typing skills show signs of improvement.

Research

In contrast to programmed instruction, computers may help students develop new perspectives on learning (Morsink, 1984). Computers can encourage exploratory thinking, the development of logical patterns, imagination, and creative thought (Papert, 1980). An increase in self concept may be associated with the

use of computers as well. Droegemuller (1982) noted that average-to-low functioning pupils who used computers reported believing that they were among the group of high-ability students. A further advantage to computers is their applicability and use by physically impaired individuals. Speech synthesizers, keyboard guards, or special devices that enlarge visual size are a few examples of how computers can assist this special student population. Reductions in mathematics errors as a result of the computer's control of mathematics columns and the presentation of only one problem at a time may prove helpful to learning disabled students (Johnson, 1982). Finally, computers can help students with poor recall by providing them with modelling, tracing, matching, feedback through error analysis and allowing for periodic review of learning material (Hannaford & Sloan, 1981).

4. Learning Contracts

A learning contract is an agreement between a teacher and student regarding what information about a specific topic is to be studied and learned (Morsink, 1984). Learning contracts should be jointly planned (student-teacher), have the behavioral objectives personalized (e.g., "you will learn . . ."), and include a list of media, resources, activities, and methods for the student to use (Dunn & Dunn, 1974). Sarkees and Scott (1985) offered the following guidelines for developing and implementing learning contracts.

1. Decide on the task.
2. Specifically state the requirements.
3. Determine the minimum acceptable accuracy.
4. Set a time limit--initially short assignments and short time periods are best.
5. Identify consequences.
   a. Both positive and negative consequences should be mutually agreed upon.
   b. Suggestions for positive rewards should be provided by the student to ensure motivation.
6. Discuss the contract in detail with the student and, if appropriate, support personnel.
7. Have all parties sign the contract.
8. Have the student work toward completion of the project.
9. Directed teaching and positive reinforcement should be provided by the vocational teacher and support personnel.
10. Positive reinforcement is given to the student if the terms of the contract are satisfactorily met.
11. Uncompleted contracts are analyzed by the teacher and the student to determine the causes.
12. New contracts are developed cooperatively.

Learning contracts are an effective means for assisting special needs students in meeting the requirements of a vocational program. They are particularly helpful for pupils who are capable

of self advocacy and motivated when allowed to participate in designing their own instructional program. Learning contracts can also prove helpful in establishing time limits for work completion and minimum proficiency standards for special needs students who have difficulty starting and/or completing assignments in vocational classes (e.g., attention deficit disordered).

EXAMPLE #5
Landscaping and Yard Maintenance Training

A learning disabled individual is having difficulty working independently after being placed in landscaping and yard maintenance on-the-job training. The vocational instructor believes the student is capable of greater independence and is looking for a way to motivate her to accomplish more tasks on her own. A learning contract is suggested by the student's special education teacher. The vocational teacher subsequently sits down with the student and mutually plans acceptable levels of performance for particular yard maintenance tasks. They agree on the maximum number of times the student will ask for help, other ways the student can solve problems, the rewards and consequences for her, and when to evaluate and renegotiate the contract. The student has a difficult time at first, but the consequences (no on-the-job training participation) of the contract motivate her to improve. The student is able to independently complete all of the job tasks specified in the contract after one month. The teacher and student meet to renegotiate a new contract and the student is rewarded by being placed at an on-the-job training site.

Research

The authors of this handbook were unable to obtain empirical evidence demonstrating the effectiveness of learning contracts with special needs learners in vocational education.

5. Competency-Based Instruction

Competency-based vocational education (CBVE) is a method of organizing instruction to achieve predetermined minimum competencies in students. This instructional strategy starts with the specification of certain achievable and required performance standards and then measures to see if they have been acquired (Schaefer, 1980). The competencies taught come from the technological requirements of a specific occupation. The intent of CBVE is to provide potential employers and employees a sense of security in knowing that graduates of CBVE programs are competent in their occupational skills.

General consensus among vocational educators indicates that competency-based vocational education programs should include the following integral parts:

1. Identification of the competencies constituting a given occupation.
2. Ordering occupational competencies in a hierarchy according to complexity.
3. Determination of cut-off points for occupation levels.
4. Agreement on what competencies (level of occupation) are to be required of a student.
5. Decide how the competencies are to be measured as being learned.

Beacham (1978) elaborated on the role of assessment in competency-based vocational programs. Pre-assessment is conducted when the student enters the program and is used to determine the point and level at which the individual should begin work. Pretesting should also occur periodically throughout the program each time the student is ready to begin a new instructional unit. Posttests also provide data to the teacher and student regarding student readiness for the next unit of instruction, program "exit" skill mastery, and subject matter that has not been mastered and needs to be repeated.

Resources that can assist in the identification of competencies for specific occupations are listed below along with a description of the information these resources provide.

* VOCATIONAL-TECHNICAL EDUCATION CONSORTIUM OF STATES (V-TECS) CATALOGS. Catalogs produced by V-TECS, Atlanta, Georgia, offer performance objectives and performance guides for use in the development of vocational-technical curricula. More than 40 catalogs exist containing required competencies for jobs found in the Dictionary of Occupational Titles. These competencies have been validated by incumbent workers in the various occupations identified in the catalogs.

* OHIO ACHIEVEMENT PROGRAM. The State of Ohio has developed achievement tests in trade, industrial, and technical education (Ohio Trade and Industrial Education Service, 1972). Tests are available in 16 different occupational areas for secondary vocational students. These instruments can be utilized to assist in the improvement of curriculum and updating of instruction in occupational education.

EXAMPLE #6
Plumber's Assistant Training

Several special needs students have had trouble mastering various required job tasks in a plumber's assistant course. The instructor seeks the help of a

special needs teacher. The specialist informs the vocational teacher that the tasks being taught have not been effectively sequenced. This is corrected and greater care and effort is taken by the instructor to teach the required jobs in this manner. Special needs students are tested on each task to see if they have achieved the competency criteria before being allowed to learn additional tasks. If they do not master the minimum competencies of a given job, they continue to practice the tasks until they can perform the job. This program reduces the number of tasks that special needs learners are exposed to in the plumber's assistant class. However, data taken at the end of the semester indicates that the tasks are (1) being successfully mastered by these students, (2) provide sequential development, and (3) result in the achievement of an entry-level job. Students are also placed in jobs that require only the competencies they have successfully completed.

Research

Studies of competency-based vocational education with special needs learners could not be located by the authors.

Implementation Considerations for all Individualized Instructional Strategies

A. Materials and Resources

Specialized materials are needed for all individualized instructional approaches except mastery learning. Commercially developed programmed instructional materials that present small-step, sequential information can be purchased at teacher supply stores as well as from special and regular education curriculum publishers. Caution must be exercised in the selection of these materials. Motivation is a critical component to the instruction of special needs students. Programmed instructional materials can be non-motivating to some special needs students because these materials reduce the degree of student-teacher interaction in the learning process. Teachers utilizing programmed instruction should attempt to find materials that are highly motivating to students and should allow enough direct instructional time prior to having students begin working on these materials.

Computer software is available through catalog sales and educational supply and computer stores. Hannaford and Taber (1982) warn that although hundreds of educational software packages are on the market, many of them are more tec cally than educationally sound. Some are too narrow in focus, wnile others are poorly sequenced or give negative feedback (e.g., flash on the screen "no, dummy" when the student makes an error).

Examples of learning contracts are presented in Hutchin (1990, p. 162) and Dettmer and Scott (1983, p. 316). A resource for obtaining curriculum-based instructional materials is the American Association for Vocational Instructional Materials, 120 Driftmier Engineering Center, Athens, GA 30602. Finally, the State Department of Education, other teachers, and local vocational administrators are additional resources for obtaining individualized instructional materials for vocational programs.

B. Training

Some of the individualized instructional approaches discussed require extensive training to implement. Training in the use of programmed instruction, mastery learning, and learning contracts can be obtained in a college or university special education methods course for teachers. Computer software knowledge can be gained from computer conferences and conventions, at local stores selling software, and from educational technology centers located in various counties throughout California. Consult the reference section for readings on specific individualized instructional methods.

C. Costs

Materials for individualized instruction can be costly (e.g., most computer software exists at about $25.00 per program). Vocational teachers should work closely with public school special education personnel when purchasing individualized learning materials for special needs learners in vocational classes. Frequently, individualized instructional materials can be borrowed from special education teachers or possibly purchased with money available in their budgets.

Dettmer and Scott (1983, p. 317) mention a number of special requirements for implementing individualized instruction which need to be considered by vocational education teachers.

1. It may take special needs students longer to complete required tasks or assignments that are assigned on an individualized basis. They should be given the same credit as other students who complete the work in less time, as long as the quality of the completed work meets the standards of the teacher.
2. Specific objectives should be developed and carefully explained to special needs learners before they begin an individualized instructional activity or assignment. These objectives should be stated in behavioral or performance terms so that students clearly understand exactly what to do.
3. Vocational teachers should determine what previous knowledge and/or skills are necessary for completion of the individualized assignment and make certain that

students possess the prerequisite information, technology, and skills.

6. Routine and periodic supervision should be provided by vocational instructors while students are working on individualized instruction activities.

7. Criteria for evaluation should be clearly defined and understood before the activity or assignment is started.

8. The learning environment where individualized instruction is to take place should be flexible and allow for a variety of activities and experiences according to the specific needs of the students.

These considerations have an impact on teacher planning time and can prove costly in terms of time wasted if not given the necessary attention when implementing individualized instruction.

Summary

Individualized instruction can assist the vocational educator by increasing the opportunity to assist other students in the classroom while, at the same time, meeting the unique needs of a special education student. It also offers the special needs student an opportunity to develop skills independently. Many special needs learners can successfully progress through an assignment or task by working at their own pace and ability level with a minimum amount of help from the teacher.

References

Beecham, B. C. (1978, October). Planning an individualized instruction. *Illinois Vocational Journal, 5*, 5-8.

Dixon, B. (1968). Learning for mastery (ERIC-ED022). *Evaluation Comment, 1*, 2.

Grese, R. A. (1976). *Aspects of learning: Implementing individualized instruction*. Des Plaines: Learning Publications.

Kim, A. B. (1984). Managing individual instruction. *The Journal for Vocational Special Needs Education, 7*(1), 5-11.

Krajewski, L. (1983). Microcomputer applications in instruction. Lecture sponsored by the Iowa State University of Science, College of Education.

Dunn, R., & Dunn, K. (1978). *Practical approaches to individualized instruction*. West Nyack, NY: Parker.

Guskey, T. (1981). Individualizing instruction in the mainstream classroom: A mastery learning approach. In Toward a research base for the least restrictive environment: A collection of papers. Lexington, KY: University of Kentucky Dean's grant, 32-46.

Hannaford, A., & Sirena, S. (1981). Microcomputers: Powerful learning tools with proper programming. Teaching Exceptional Children, 13, pp. 56-57.

Hastad, R. (1971). Effect of certain individual learner personality differences on instructional methods. AV Communication Review, 19, 287-297.

Hinton, J. R. (1978). Individualized learning: A summary of recent research. NASP Journal, 12(8), 13-16.

Hunter, W. R. (1973). Status of individualized instruction in colleges identified as members of the council of small central community/junior colleges. Columbia, MO: University of Missouri.

Johnson, D. (1982). Microcomputers and dyslexic students. Educational Computer, 2, 36-37.

Learning Research Center. (1978). Issues in learning: PSI or the Keller Plan. Knoxville, TN: University of Tennessee.

Levine, A. (1978). Handbook on undergraduate curriculum. San Francisco: Jossey-Bass Publishers.

Morris, V., Blatt, S., Mutz, S., & Santina, P. (1971). Motivation, step size and selected learner variables in relation to performance with programmed instruction. Programmed Learning and Educational Technology, 7, 278-287.

Norcott, C. V. (1984). Teaching special needs students in regular classrooms. Boston: Little, Brown and Company.

Ohio Trade and Industrial Education Service. (1972). Achievement test program. Columbus, OH: State Department of Education.

Papert, S. (1980). Mindstorms. New York: Basic Books.

Phelps, L. A. (1978). Instructional strategies for handicapped students. In R. A. Ernst (Ed.), Vocational instruction. Arlington, VA: The American Vocational Association.

Reiser, R. D., & Gerlach, V. S. (1982). Vocational special needs. Homewood, IL: American Technical Publishers.

Schaefer, C. J. (1978). Putting competency-based instruction in perspective. In R. A. Ernst (Ed.), Vocational instruction: 1981 yearbook of the American Vocational Association. Arlington, VA: The American Vocational Association.

TASK ANALYSIS

Description

Task analysis involves breaking down a job task or curriculum into component subskills or parts (Sarkees & Scott, 1981). The goal of task analysis is to organize an occupational task or curriculum into increasingly specific levels so that the instructor and student have a clear understanding of what is required to complete the activity. The steps of the task analysis should be written in short, clear and measurable terms. Instruction should be matched to the student's present skill level and designed to move the student to a specified desired level of performance (Salvia & Ysseldyke, 1981).

Task analysis in occupational education can be conducted at any or all of the following levels (Peck, Cooke, & Appoloni, 1981).

1. General Curriculum Domain. Organization of the overall curriculum into related skill areas. These skill areas represent the total curriculum to be covered by the instructor in a vocational education class (see Example #1).
2. Skill Area Domain. Specification of the various skill groups that comprise each general curriculum domain (see Example #2).
3. Specific Skills Domain. Specification of tasks or skills to be taught in a given skill area. An underlying assumption is that failure in performance of an essential subtask or skill will prevent a student from successfully mastering the specific skill area domain (Gagné, 1967) (see Example #3).
4. Specific Skills Subskills Domain. Specification of various behaviors that can be linked together and taught in a step by step or incremental fashion to produce student mastery of a specific skill (see Example #4).

Vocational education teachers have the option to task analyze their courses at any level described above. Most teachers task analyze the general and skill area domains of their curriculum. However, the need to further break down an occupational education class into specific skills and subskills domains is particularly important when teaching special needs learners. Task analysis at these levels facilitates successful mastery by special needs learners of the various jobs taught in a vocational education class.

EXAMPLE #1
General Curriculum Domain

The following task analysis of the general curriculum domain for Auto Mechanics Occupations is presented by Phelps (1975).

1. Service the components of the mechanical system
2. Service cooling systems
3. Service fuel and carburetion system
4. Service injection system
5. Service exhaust system
6. Service electrical system
7. Service cranking motor system
8. Service charging system
9. Service standard transmissions
10. Service clutches
11. Service differentials
12. Service driveshafts
13. Service brake systems
14. Service suspension systems
15. Service hydraulic systems
16. Service air conditioning systems
17. Service emission control systems
18. Service front end alignment
19. Lubricate vehicle chasis and change engine oil filter
20. Mount, balance, and rotate tires

EXAMPLE #2
Skill Area Domain

The following is a task analysis of the skill areas to be covered in a special class for developmentally disabled students (taken from Peck, Cooke, & Appoloni, 1981). General curriculum domains are represented by whole numbers and skill areas are coded below these.

1.0 Practical Academic Skills
- 1.1 Reading Sight Words
- 1.2 Number Concepts
- 1.3 Money

2.0 Self-Help Skills
- 2.1 Dressing
- 2.2 Toileting
- 2.3 Eating

3.0 Motor Skills
- 3.1 Gross Motor
- 3.2 Fine Motor

4.0 Recreation Skills
- 4.1 Athletics
- 4.2 Dance
- 4.3 Games

5.0 Communication Skills
- 5.1 Receptive Language
- 5.2 Expressive Language
- 5.3 Signing

6.0 Vocational Skills
- 6.1 Office Work
- 6.2 Laundry
- 6.3 Janitorial

7.0 Interpersonal Skills
- 7.1 Following Directions
- 7.2 Greeting Skills
- 7.3 Cooperative Behavior

EXAMPLE #3
Specific Skills Domain

The following is an illustration of the specific skills to be taught to students in a Janitorial and Maintenance class. The task analysis contains the general curricular, skill area, and specific skills domains.

3.0 Specific Skills
- 3.1 Janitorial
  - 3.1.1 Sweep floors
  - 3.1.2 Empties and cleans receptacles
  - 3.1.3 Vacuum rugs
  - 3.1.4 Mops floors
  - 3.1.5 Washes windows
  - 3.1.6 Cleans lavatory
  - 3.1.7 Replaces light bulb, other supplies
  - 3.1.8 Waxes floor
  - 3.1.9 Makes simple repairs

EXAMPLE #4
Specific Skills Subskills Domain

The following illustrates a task analysis beyond the specific skills domain. This task analysis is taken from Wehman and McLaughlin (1980) and shows how to teach a mentally retarded student enrolled in a Food Service Occupation class to make a glass of iced tea. It also contains a teaching plan which the vocational instructor can use to present the lesson.

INSTRUCTIONAL OBJECTIVE: Given a jar of iced tea, glass, ice cubes, teaspoon, and water, student(s) will make a glass of instant iced tea with no errors, for three consecutive days.

PREREQUISITE SKILLS: Pincer and palmar grasps

TASK ANALYSIS:

1. S locates jar of iced tea on shelf
2. S places jar on counter
3. S locates 8-oz glass on shelf
4. S places glass on counter
5. S locates teaspoon
6. S places teaspoon on counter
7. S twists top off instant iced tea jar
8. S places top on counter
9. S picks up teaspoon
10. S dips teaspoon into jar
11. S lifts teaspoon up
12. S taps teaspoon against jar to level teaspoon
13. S places tea in glass
14. S places top back on jar
15. S places glass under faucet
16. S turns cold water on at medium force
17. S fills glass until liquid is 1 inch from top
18. S turns faucet off
19. S stirs liquid until all tea is dissolved
20. S locates ice
21. S places ice in glass

Research

Research demonstrating the effectiveness of task analysis in vocational education with special needs learners has primarily focused on developmentally disabled individuals. A number of studies have found that these subjects can acquire complex skills and perform them at acceptable rates when task analysis based instruction is utilized. Bellamy (1976) was able to successfully train developmentally disabled (profoundly mentally retarded) individuals on a variety of industrial assembly tasks using a form of task analysis known as operant chaining. Gold (1972, 1974, 1976) used a similar method to train severly handicapped persons in the assembly of a bicycle brake. Finally, Karan, Wehman, Renzaglia, and Schutz (1976) were able to improve the workshop performance of severely developmentally disabled subjects who had never worked before as a result of task analysis based instruction. According to Wehman and McLaughlin (1980), a key component to the success of all of these vocational training programs was the development and use of a task analysis which provided a detailed breakdown and systematic chaining of the critical skills necessary for severely and profoundly mentally retarded persons involved in vocational training.

Implementation Considerations

A. Materials and Resources

Specialized materials and equipment are not necessary in order to successfully implement task analysis based instruction with special needs learners. A vocational instructor may wish to develop a vocational task inventory form and a task analysis form to identify behavioral objectives and component steps for each written objective. Examples of forms of this type can be found in Module 4 in Phelps (1975). Another source of task analysis information is the V-TECS catalogs published by the Vocational Technical Education Consortium of States, 795 Peachtree Street, N.E., Atlanta, GA 30365. An advantage of these materials is that the occupational tasks identified in the catalogs have been validated through surveys of workers. V-TECS has produced over 130 catalogs, presenting information and task analysis of more than 350 job titles found in the Dictionary of Occupational Titles.

B. Training

Specialized training in task analysis may or may not be necessary, depending upon the unique needs of the individual vocational teacher. Task analysis for special needs learners requires considerably greater detail with respect to writing components of instructional objectives. Individuals who have difficulty accomplishing this task may require specialized instruction. An in-service resource guide which contains a training module on task analysis entitled Instructional Development for Special Needs Learners: An In-Service Resource Guide (Phelps, 1975) is recommended and is available in California through the Vocational Occupation Information Center for Educators (VOICE). Finally, college or university teacher education training programs offer instructional methods courses which cover the elements of task analysis.

C. Costs

Financial costs to initiate task analysis based instruction for special needs learners are minimal to none. Costs for developing and printing occupational task inventories and task analysis forms are a few items that come to mind. Costs in terms of time to develop inventories and write task analysis for given occupational courses may be extensive, particularly if a vocational instructor has no models to utilize as examples. The V-TECS catalogs are recommended for individuals who are at the beginning stages of task analysis based instruction in vocational education.

Summary

Task analysis is an effective instructional technique for use with special needs learners. It helps organize an occupational curriculum into component parts and provides the vocational educator with a detailed set of steps through which instruction can be effectively provided to special needs individuals. Special needs students have a high probability of mastery of a job task if the job to be learned has been effectively organized into smaller, teachable subskills.

REFERENCES

Bellamy, G. T. (1976). A review of research on work productivity. In G. T. Bellamy (Ed.), Habilitation of the severely and profoundly retarded: Reports from the specialized training program. Eugene, OR: Center on Human Development University of Oregon.

Gold, M. W. (1972). Stimulus factors in skill training of the retarded on a complex assembly task: Acquisition, transfer, and retention. American Journal of Mental Deficiency, 76, 517-526.

Gold, M. W. (1974). Redundant cue removal in skill training for the mildly and moderately retarded. Education and Training of the Mentally Retarded, 9(1), 5-8.

Gold, M. W. (1976) Task analysis: A statement and an example using acquisition and production of a complex task by the retarded blind. Exceptional Children, 43(2), 78-84.

Howell, K. W. (1985). A task analytical approach to social behavior. Remedial and Special Education, 6(2), 24-30.

Karan, O. C., Wehman, P., Renzaglia, A., & Schutz, R. (Eds.) (1976). Habilitation practices with the severely developmentally disabled, Vol. 1. Madison, WI: University of Wisconsin.

Peck, C. A., Cooke, T. P. & Apolloni, T. (1981). Self-instructional curriculum development. Bellevue, WA: Edmark Associates.

Phelps, L. A. (1975). Instructional development for special needs learners: An in-service guide. Urbana, IL: Department of Vocational Education, Univesity of Illinois.

Salvia, J., & Ysseldyke, J. (1981). Assessment in special and remedial education. Boston: Houghton Mifflin.

Sarkees, M, D., & Scott, J. L. (1985). Vocational special needs. Homewood, IL: American Technical Publishers

Wehman, P. & McLaughlin, J. (1980). Vocational curriculum for developmentally disabled persons. Baltimore, MD: University Park Press.

Additional Resources

Vocational Occupation Information Center for Educators (VOICE), 721 Capitol Mall, Room 165, Sacramento, CA 95814.

TUTORING (PEER OR ADULT)

Description

Tutoring is an instructional technique in which an individual, other than the teacher, is assigned to help a special needs student improve in academic and/or social development. The intent of tutoring is for collaborative learning to occur, resulting in increased individual attention, improved teacher-student relations, and increased learning efficiency for the student (Pierce, 1983). Tutors can be used by vocational instructors in the following ways (Sarkees & Scott, 1985).

1. Assist in teaching content area instruction.
2. Reinforce classroom learning.
3. Teach remedial academics.
4. Perform presentations and demonstrations.
5. Work in one-to-one or small group activities in a lab setting.
6. Aid in completing classroom assignments and projects.
7. Help in review for tests.
8. Administer and evaluate tests.

Tutors for special needs students can be recruited from a variety of sources: college students, part-time workers in the community, parents, senior citizens, retired teachers, and church and community leaders.

A particularly exciting resource that has received a substantial amount of attention in educational research literature is the peer tutor. This method utilizes another student in the classroom as a tutor for the special needs learner. Well trained peer tutors are advantageous in that they can act as a role model for the special needs student, help develop interpersonal skills, increase the student's self-concept and motivation, allow the student to remain in a mainstreamed vocational program setting, and free the vocational teacher to service other students in the class (Sarkees & Scott, 1985).

EXAMPLE #1
Peer Tutor

An animal care teacher has a special needs student in her classroom who is experiencing difficulty taking notes during class lectures, reading and comprehending the text, and studying for examinations. The teacher calls the special education staff at the student's high school and speaks with the resource specialist. She is pleasantly surprised to learn that an elective class in

Peer Tutoring is offered and designed to introduce interested students to the teaching profession. The resource specialist arranges a meeting between the vocational instructor and the teacher of the Peer Tutoring class. As a result of this meeting, a student tutor is assigned to the special needs learner in the animal care class. The tutor's responsibilities are to assist in taking notes, tape record assigned text readings for the special needs student, and help the student to prepare for examinations. In addition, the peer tutor is provided with modified curriculum materials from the high school resource specialist.

EXAMPLE #2
Adult Tutors

A special needs student in a cabinet making class has difficulty with spatial and perceptual skills and requires an inordinate amount of individual attention from the vocational instructor. The teacher is happy to offer the help to the student but is beginning to notice that other students in the class are resenting the extra attention given to the special needs student, particularly when they need assistance in the class. The instructor comes up with a novel idea which he believes will help solve the problem. He calls the local carpenters union and asks if there are any retired union workers who would be interested in volunteering a couple of hours a week to assist the class. Within a week's time he receives a couple of calls and is able to arrange for two gentlemen to act as tutors. He assigns one of them full time to the special needs student and the other as a rover, providing help to any student who needs assistance. As a result of the new arrangement, the special needs student is beginning to master the assigned tasks in the class and the rest of the students are much happier.

Research

A wealth of literature exists on the use of peer tutors with special needs students. Studies documenting the effectiveness of adult tutors in vocational settings with this student population could not be found by the authors. Therefore, the research reviewed here is restricted to peer tutoring literature.

A review of peer tutoring special education literature conducted by Chiang, Thorpe, and Darch (1980) reported that academic and affective gains occurred for both tutors and students involved in cross age tutoring experiences. A second peer tutoring study conducted by these researchers in which they controlled for the "Pygmallian effect" (students improving simply because they are given extra attention and expected to improve)

resulted in "appreciable improvement" in learning disabled subjects' word recognition skills.

Ashley, Zahniser, Jones, and Inks (1986) noted several benefits to teachers who use peer tutoring.

1. Their teaching load is reduced, allowing more time to help other students.
2. Teachers find that both tutor's and tutees' attitudes toward the class and school in general improve through peer tutoring.
3. Class troublemakers often exhibit increased maturity and respect toward others (including the teacher) when given the responsibility of instructing other students.

Studies reviewed by Ehly and Larsen (1980) suggested that the learner or tutee is better able to concentrate on learning as a result of being more relaxed when working with a peer than with a teacher. The achievement gains attained through tutoring may transfer to the regular classroom and tutoring seems to facilitate improvement in self concept. Ehly and Larsen's review of the literature reported that peer tutoring was effective in increasing achievement levels in math, gross and fine motor skills, social behavior, and articulation skills in handicapped learners.

Delquadri and Greenwood (1981) believe that peer tutoring is beneficial because it increases the opportunities for students in a classroom to respond to instruction. Classwide peer tutoring (e.g., every student tutors another student in the class) can result in every student in a class receiving 10 minutes of direct practice time on a key instructional skill in a variety of academic subjects and can improve academic responding from 20% to 70% (Delquadri, Greenwood, Whorton, Carta, & Hall, 1986).

Although tutoring programs were initially intended to assist students experiencing academic problems, tutoring is gaining popularity as an instructional strategy for use with special needs students in vocational education programs. Asselin and Anderson (1986) investigated the effectiveness of a semester-long peer tutoring program for special needs learners implemented in a vocational-technical center. Special needs students reported that the advocate relationship with a tutor improved their self confidence and made them feel better about themselves. Tutoring is conducive to gross and fine motor improvement as well as language development activities and skills (Asselin & Vasa, 1981). When tutors, special education teachers, and vocational teachers cooperate, tutoring programs can be effective in easing the integration of mildly handicapped students into vocational classes (Ashley et al., 1986).

Implementation Considerations

A. Materials and Resources

A resource for planning a peer tutoring program was written by Ashley et al. (1986) and is entitled Peer Tutoring: A Guide for Program Design. It is available from the National Center for Research in Vocational Education, The Ohio State University, 1960 Kenny Road, Columbus, Ohio 43210-1090. Ashley et al. recommend several tasks involved in preparing a plan for a peer tutoring program.

1. Establish a planning group.
2. Assess student needs.
3. Develop program goals and objectives.
4. Determine facility, material, and equipment needs.
5. Determine personnel requirements.
6. Draft a plan and circulate it for review.
7. Present the program plan to administration.

Extensive guidelines on each of these steps are outlined in the manual.

Ashley et al. recommend that physical resources such as tutoring rooms or facilities (e.g., library, cafeteria, classrooms, and other available spaces) be identified by a person developing a tutoring program. Second, special equipment such as tape recorders, record players, television, video, slide projectors, and other educational media need to be made available to assist students involved in peer tutoring. Finally, special curriculum and instructional materials may need to be provided to tutors of special needs students.

The authors of this handbook were unable to locate resource manuals on tutoring programs for persons other than peers. Many public schools utilize parent volunteers as classroom instructional aides. Orientation and training sessions covering where supplies are located, classroom procedures, basic instruction, and discipline techniques frequently are offered to parents wishing to serve as instructional aides. It is, therefore, recommended that one contact the local public school or school district office for possible assistance in obtaining resources and materials for adult tutoring programs. In addition, vocational teaching manuals, student textbooks, and other instructional materials can be provided to adult tutors to assist them in tutoring special needs learners.

B. Training

The key to an effective tutoring program for special needs learners lies in providing adequate training to potential tutors. Research has shown that trained tutors perform more effectively than untrained tutors, with their tutees making significantly

greater gains than those of untrained tutors (Harrison & Exner, 1979; Klingelhofer, 1977; Gladstone & Sherman, 1972; Harrison, 1978).

Training will be necessary for both the coordinator of the tutoring program and the individuals who will be tutors. Bailey et al. (1980) recommend that if a tutoring program is to be offered on a systematic basis, a coordinator with the following types of skills ought to be hired or appointed to carry out developmental and operational duties:

1. Special or developmental education background.
2. Oral oral and written communication skills.
3. Leadership and management skills.
4. Previous teaching or tutoring experience.
5. Previous program development experience.

It is recommended that persons interested in learning how to start an effective tutoring program consult the literature on the subject or utilize the best tutoring manual available from the National Center for Research in Vocational Education.

Bailey et al. specify particular qualifications to seek in individuals who wish to serve as tutors. Prospective tutors should be interviewed for the purpose of evaluating

1. experience;
2. ability to communicate;
3. attitudes toward special needs students; and
4. appearance and grooming.

According to Bailey et al., training for tutors does not require an extensive period of time. Usually tutoring can accomplish the tutor from being involved in tutoring and can utilize the tutor's creativity. Training periods can vary from several hours to a semester-long credit course. The exact length of time needed will depend on the unique needs of the school and/or teacher in need of tutors, as well as the tutor's background. Tutor training programs typically include the following:

1. Roles and functions of the tutor.
2. Tutoring methods and skills.
3. Practice exercises.
4. Orientation to special needs students.

Occasional instructors choosing to use adult tutors may not need to provide extensive training for those individuals. This may be particularly true if the tutor already has a strong background in the subject matter of the vocational class (e.g., a retired nurse). Training in this instance should concentrate on classroom rules and procedures, where supplies are located, a brief overview of the learning and behavioral characteristics of the special needs student, and instructional services that can be utilized by the tutor.

Costs

The costs of starting and operating a tutoring program will vary, depending upon the size and scope of the intended program and what type of tutors are being used (e.g., peer or adult). A large, active peer tutoring program may take several months of planning and require substantial financial support, whereas a smaller program can be developed within a few weeks with minimal costs. Financial support may be needed during the planning phase to purchase resources and provide materials for review, tutoring literature searches, and pay for clerical assistance. Planning time must also be made available for staff to meet and discuss the many concerns that will need to be addressed. For these reasons, planning activities should include adequate implementation time, staff, and possibly students (help at all levels).

Smaller scale peer tutoring programs are much less costly to implement. Frequently volunteer teachers will select outstanding students in a class to assist as tutors students who need extra help and attention. This is a very effective way to start a peer tutoring program and requires little extra time on the teacher's part.

While tutoring programs can be implemented for little, if any, expense, time must be allowed to evaluate, interview, and train adult tutors. Also, if adult tutors are to be paid, a funding source will need to be located.

Release time for volunteer teachers may be necessary in order to accomplish some of the objectives mentioned. Inclusion of existing tutoring programs by planning personnel may prove beneficial and must be considered in most applications. Possible planning group meetings throughout the school year to discuss strengths, weaknesses, and needed improvements are recommended for large scale peer tutoring programs.

Summary

Tutoring represents a novel alternative and a proven instructional strategy for increasing special needs students' social as well as academic skills. If planned, implemented, and evaluated properly, tutoring can be a valuable instructional strategy for meeting educational needs of special needs students.

References

Author, A. (Year). Title. Publication, Place, Pages.

Author, A. (Year). Title. Publication, Place, Pages.

SECTION III

STATE AND NATIONAL RESOURCES

INTRODUCTION

The state and national resources identified in this section offer a wide range of publications and services related to instructional programming for special education students in regular vocational education settings. The first part of this section presentes a host of agencies, organizations and clearinghouses available in California for help in providing vocational instruction to special education students. The second part identifies pertinent associations, agencies, and clearinghouses available on a national scale.

STATE

Associations

California Association of Rehabilitation Facilities (CARF), 1111 L. Street, Suite 410, Sacramento, CA 95814 (916) 441-1944

Provides information regarding program implementation in adult rehabilitation facilities.

California Association of Vocational Education (CAVE), National Priority Population, C/O Dr. Thomas Lopez, Peter Lassin Annex, 5022 58th Street, Sacramento, CA 95820 (916) 454-8273

Provides the latest developments in vocational education as it pertains to National Priority Populations, such as handicapped, disadvantaged, and limited English speakers.

California Industrial Technical Education Consortium (CITEC), Contact: Chris Almeida, State Department of Education, 721 Capitol Mall-4th Floor, Sacramento, CA 95814 (916) 445-6726

Provides teacher in-service and technical assistance. Also distributes instructional materials to teach basic skills via industrial technology education.

California Governor's Committee on Employment of the Handicapped, 800 Capitol Mall, Sacramento, CA 95814 (916) 323-2345

Conveys to the governor and the general public issues on transition.

California State Federation/Council for Exceptional Children (CSF/CEC), P.O. Box 1274, Huntington Beach, CA 92647-1047 (714) 962-1356, Ext. 264

Provides newsletters and state conferences containing information about career/vocational education and transition.

Departments/Divisions

California Department of Employment Development (EDD), 800 Capitol mall, Sacramento, CA 95814, (916) 445-8008

Provides employment placement activities, including search, training and placement, for various programs and service which may assist special needs students find employment.

California Regional Vocational Education Offices

One Bunker Hill Building, 601 W. 5th Street
Los Angeles, CA 90017
(213) 620-3424

1919 21st Street
Sacramento, CA 95814
(916) 445-9570

6075 State Building, 1111 Jackson Street
Oakland, CA 94607
(415) 464-0393

Federal and state mandates which apply to students with special needs.

California State Department of Development Services/Regional Centers, 1600 Ninth Street, Sacramento, CA 95814, (916) 332-8156

The regional center can assist in providing a collaborative approach to vocational education, especially with mobility training.

California State Department of Education, 721 Capitol Mall, Sacramento, CA 95814, (916) 445-4688.

Division of Special Education (4th Floor) (916) 323-4768.

Administers the state program for the education of exceptional children; conducts student identification and needs studies; promotes the development of professional service in transition.

Division of Vocational Education (4th Floor)
(916) 445-0754

Administers the federal/state funding for vocational education for special needs individuals; develops personnel training, special projects, and materials for vocational transition of special populations.

Job Training Partnership Act (JTPA)
(916) 323-6754

Provides funding sources for transitional, collaborative employment services for handicapped youth and adults. Local Service Delivery Areas (SDAs) provide various training opportunities.

California State Department of Rehabilitation, 830 K Street Mall, Sacramento, CA 95814, (916) 445-8630

Provides training, assistive devices, collaborative approaches and employment services for handicapped individuals. Has regional offices located throughout the state.

Education Transition Center (ETC), 630 University Avenue, Suite 200, Sacramento, CA 95825, (916) 921-5700

Facilitates transition activities for special education students by providing resources, competitive grants for innovative practices, and general support of all phases of transition.

Clearinghouses/Technical Assistance Projects

The following California agencies and organizations provide resource materials, technical assistance, documents, and in-service training programs for educators to assist them in integrating special education students into regular vocational classes.

Clearinghouse Depository for Handicapped Students, California State Department of Education, 721 Capitol Mall, Sacramento, CA 95815 (916) 445-1260/5183

Provides special media materials, recorded materials, Braille, and large type for students with special needs.

National Diffusion Network (NDW), California Facilitator Center, 1575 Old Bayshore Highway, Burlingame, CA 94010. Contact: Jane Zinner, (415) 692-2956 or (800) 672-3494

In-service training curriculum materials and catalogs of programs with descriptors.

Project HEART (Health Occupation After Realistic Training), North Orange County Regional Occupational Program (ROP), 2360 W. La Palma, Anaheim, CA 92801. Contact: Connie Hunt (714) 776-2170

Provides consultation and in-service opportunities to vocational instructors by health educators in the training of special needs students. A resource manual is available.

Project MERGE, (Industrial, Health, and Apprenticeship Education), California State Department of Education, 721 Capitol Mall-4th Floor, Sacramento, CA 95814. Contact: Chris Almeida, Program Manager (916) 445-6726.

Provides consultation by expert vocational educators to local personnel regarding special education students in regular industrial education. A variety of topics are included, e.g., adaptive devices.

Rehabilitation Administration Department, McClaren College of Business, University of San Francisco, San Francisco, CA 94117. Contact: Richard Robinson (415) 666-6114.

Distrubutes materials, provides workshops, and gives technical assistance in the area of supported employment.

Resources in Special Education, Funded by the Program, Curriculum, and Training Unit, Special Education Division, California State Department of Education, 650 University Avenue, Room 201, Sacramento, CA 95825. Contact: Velda Ruddock, Information Dissemination Specialist (916) 921-0521

Comprehensive resource service including resource listing, bibliography listing, consultant back, and electronic bulletin board in the area of special education and transition. Publication: The Special Edge Newsletter.

Vocational Education Resource System (VERS), California Institute on Human Services, Sonoma State University, Rohnert Park, CA 94928, (707) 664-2416.

Provides resource materials, technical assistance, vocational consultants, and program assessment to vocational educators regarding special needs students in regular vocational programs. Publication: Working Together.

Vocational and Occupational Information Center for Educators (VOICE), California State Department of Education, 560 J Street, Room 385, Sacramento, CA 95814 (916) 445-0402

Provides a wide range of publications in vocational education. Documents are available for loan. Materials are accessed through descriptors.

Windmills for Educators. California Institute on Human Services, Sonoma State University, Rohnert Park, CA 94928 (707) 664-2416

A training program that provides workshops to sensitize vocational educators for opportunities in integrating students with special needs into regular vocational classes.

Colleges/Universities

California Community Colleges Chancellor's Office, 1107 Ninth Street, Sacramento, CA 95814 (916) 445-8752

Specially Funded Programs (916) 324-8592

The local community colleges provide a number of transitional services. Consult with your local college for further information.

Workability II, Chancellor's Office

Collaborative training and employment placement activities provided for community college students in these jointly funded programs by the State Department of Rehabilitative and the Chancellor's Office.

California State University Office of the Chancellor, 400 Golden Shore, Long Beach, CA 90802-4275 (213) 590-5506

Headquarters for the administration of the California State University system. Check with your nearest university for personnel preparation programs in vocational and special education.

Transitional Services Training Program, California State University, Long Beach, Bureau of Employment-Related Education/Training for Special Populations, 1250 Bellflower Boulevard, Long Beach, CA 90840, (213) 498-4105

Offers an interdisciplinary graduate program for professionals in the fields of special education, vocational education and adult services (e.g., rehabilitation services, mental health).

Vocational Transition for the Handicapped, Division of Special Education and Rehabilitation Services, School of Education, San Jose State University, San Jose, CA 95192 (408) 277-2646

Provides specialized training and technical assistance in the area of transitional programming for handicapped persons.

University of California

Check the special education unit within your nearest university for further information on professional activities and opportunities related to instructional programs for handicapped youth and adults.

NATIONAL

Agencies and Organizations

The following is a listing of selected agencies and organizations which provide technical assistance or modifications of vocational training sites and work settings:

American Printing House for the Blind, P.O. Box 6086, Louisville, KY 40206 (502) 895-2405

Job Accomodation Network for Employment (JAN), West Virginia University, P.O. Box 468, Morgantown, WV 26505 (800) 526-7234

Associations

American Vocational Association (AVA), 1410 King Street, Alexandria, VA 22314 (703) 683-3111

Major professional organization for vocational educators and special service personnel in vocational education. One major division is the special needs division. Publication: Vocational Education Journal.

Association for Persons with Severe Handicaps (TASH), 7010 Roosevelt Way, NE, Seattle, WA, 98115 (206) 523-8446

Advocates quality education and occupational training methods and programs for severely handicapped persons. Publication: Journal of the Severely Handicapped.

Council for Exceptional Children (CEC), 1920 Association Drive, Reston, VA 22091 (703) 620-3660

Distributes materials, provides technical assistance, conducts training institutes, conferences, and promotes legislation on behalf of the education and employment rights of handicapped persons. Publications: Exceptional Children, Teaching Exceptional Children.

Division on Career Development, Council for Exceptional Children, 1920 Association Drive, Reston, VA 22091 (703) 620-3660

Works with other CEC divisions to promote research, professional training, techniques, and training materials. Publication: Career Development for Exceptional Individuals.

National Association of the Physically Handicapped, 76 Elm Street, London, OH 43140 (614) 852-1664

Promotes employment, barrier-free design, education and research, recreation, and transporation.

National Association of Rehabilitation Facilities, P.O. Box 17675, Washington, DC 20041 (703) 556-8848

Conducts educational seminars, assists in developing and improving services. Publication: Rehabilitation Review.

National Association of Vocational Education Special Needs Personnel (NAVESNP), C/O American Vocational Association, 1410 King Street, Arlington, VA 22314 (703) 683-3111

Promotes legislation, technical information, staff development, and special workshops for vocational educators. Publication: The Journal for Vocational Special Needs Education.

National Resource Center for Materials on Work Evaluation and Work Adjustment, Materials Development Center, Institute for Vocational Rehabilitation, University of Wisconsin-Stout, Menomonie, WI 54751 (715) 232-1342

Disseminates literature, materials, and procedures on work evaluation and adjustment.

United Cerebral Palsy Associations, 66 East 34th Street, New York, NY 10016 (212) 481-6300

Provides program assistance in regard to research and professional training, vocational programs and education.

Wisconsin Vocational Studies Center, University of Wisconsin-Madison, 964 Educational Sciences Building, 1025 W. Johnson Street, Madison, WI 53706 (608) 263-3415

Publishes and disseminates products that focus on the handicapped individual's abilities and the kind of academic and supportive services that are needed for successful integration.

Clearinghouses

The following clearinghouses provide resources and promote research in the field of transition.

American Foundation for the Blind, 15 West 16th Street, New York, NY 10011 (212) 620-2000

Provides information on blindness and promotes research activities, aids, appliances, public education, and a lending library. Publication: Journal of Visual Impairment and Blindness.

ERIC Clearinghouse on Adult and Career and Vocational Education, National Center for Research in Vocational Education, The Ohio State University, 1960 Kenny Road, Columbus, OH 43210-1090, (800) 848-4815

Provides documents related to curriculum, instruction and research pertaining to vocational and career education for special needs persons.

HEATH Resource Center, One Dupont Circle, NW, Suite 670, Washington, DC 20036-1193, (202) 939-9320 and 800-54-HEATH

Provides information on postsecondary education for persons with disabilities and maintains a resource file on postsecondary programs. Publication: Fact Sheet.

National Center for Research in Vocational Education, The Ohio State University, 1960 Kenny Road, Columbus, OH 43210 (800) 848-4815; (614) 486-3655

Publishes materials in vocational education, research, personnel development, evaluation, materials development, and instructional materials.

National Association of the Deaf, 814 Thayer Avenue, Silver Springs, MD 20910 (301) 587-1788

Gathers information and conducts studies and workshops to improve services and training. Publication: Deaf America; Broadcaster.

National Clearing House of Rehabilitation Training Materials, Oklahoma State University, 115 Old USDA Building, Stillwater, OK 74078 (405) 624-7650

Serves as a clearinghouse for information on products which can enhance the skills of rehabilitation professionals.

National Rehabilitation Information Center (NARIC), Catholic University of America, 4407 8th Street, NE, Washington, DC 20017 (202) 635-5822 and 800-34-NARIC

Provides documents and generates review of research literature in the area of rehabilitation of people with disabilities.

Education Transition Center

Projects on Sale!

Analysis of Role-Shifting Patterns in Transition, by Joseph J. Pasanella and Thomas I. Justice, softcover, 47 pp.

$10.00

Building Bridges: Strategies for Parent-Professional Collaboration Training for Transition, by Marlene A. Dick, Lois Moulin, Susan Pellegrini, and Jeri Traub, softcover, 50 pp.

$20.00

Collaborative Transition Planning Systems in Los Angeles County, by Bill Whitmore, softcover, 130 pp.

$20.00

A Needs Assessment for Adults with Learning Disabilities, by the Rehabilitation Center for Brain Dysfunction, Inc., softcover, 95 pp.

$15.00

Synthesis of Individual Transition Plans: Format and Process, by Kathleen LaMar and Bill Rosenberg, softcover, 128 pp.

$20.00

Model Curriculum Emphasizing Transition: Planning Guide for Students with Mild Disabilities, by Lee Anderson, shrink-wrapped, 412 pp, 9 discs (Apple IIe and IBM).

$25.00

A Curriculum Guide for Transition: An Adaptation of the Individualized Critical Skills Model for Students with Mild Disabilities, by Janet Wright, softcover, 70 pp.

$10.00

Orange County Transition Products, by Beverly Huff, Linda O'Neal, Barbara Vali, Masha Burgess, and Michele Lovenduski:

Orange County Special Needs Services Directory, 220 pp.
Transition, softcover, 50 pp.
Transition Reference Guide, softcover, 9 pp.
Vocational/Employment Preparation, brochure

$20.00

A Collaborative Transition Planning System for Rural Communities: Butte County SELPA Case Study, by Frank Terstegge, softcover, 200 pp.

$20.00

Instructional Strategies for Special Education Students in Regular Vocational Classes: A Pre-Service Handbook, by Charles Kokaska and Leonard Albright, softcover, 96 pp.

$17.50

ORDER FORM

I would like to order:* _____

Name/title: _____

Address: _____

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Phone: _____

Available from Resources in Special Education, (RiSE)
650 University Avenue, Room 201
Sacramento, CA 95825

*Enclose purchase order or check made out to UCP/RiSE.
Please include $4.00 for shipping and handling. Add $2 for each additional item ordered.
Include CA sales tax where applicable.

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